	Type	Hits	Search Text
1	IS&R	1	("6159495").PN.
2	IS&R	1	("6752834").PN.
3	IS&R	0	("2002013408").PN.
4	IS&R	0	("2001018614").PN.
5	IS&R	1	("5972385").PN.
6	IS&R	0	("200183858").PN.
7	IS&R	0	("2005124797").PN.
8	IS&R	0	("2005124797").PN.
9	BRS	1	(sulfonated same keratin) and hydroxyapatite
10	BRS	1	(sulfonated with keratin) and hydroxyapatite
11	BRS	1	(sulfonated near keratin) and hydroxyapatite
12	BRS	205	sulfonated and keratin and hydroxyapatite
13	BRS	0	(sulfonated and keratin) near hydroxyapatite
14	IS&R	1	("7148327").PN.
15	BRS	23	keratin with hydroxyapatite
16	BRS	919	keratin and hydroxyapatite
17	BRS	1	(sulfonated and keratin) same hydroxyapatite
18	BRS	1	keratin near hydroxyapatite
19	BRS	141	keratin same hydroxyapatite
20	BRS	1	(sulfonated and keratin) with hydroxyapatite
21	IS&R	0	("2002177903").PN.
22	IS&R	0	("2002177903A1").PN:

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Set	Items	Description
? s keratin		
S1	75091	KERATIN
? s hydroxyapatite		
S2	74761	HYDROXYAPATITE
? s s1 and s2		
	75091	S1
	74761	S2
S3	40	S1 AND S2
? s s3 and sulfonated		
	40	S3
	15491	SULFONATED
S4	0	S3 AND SULFONATED

? t s3/9,k/1-10

3/9,K/1 (Item 1 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

0016268770 BIOSIS NO.: 200600614165
Structure of white rhinoceros (Ceratotherium simum) horn investigated by X-ray histology with implications computed tomography and for growth and external form
AUTHOR: Hieronymus Tobin L (Reprint); Witmer Lawrence M; Ridgely Ryan C
AUTHOR ADDRESS: Ohio Univ, Dept Sci Biol, Irvine Hall, Athens, OH 45701 USA **USA
AUTHOR E-MAIL ADDRESS: Th108702@ohiou.edu
JOURNAL: Journal of Morphology 267 (10): p1172-1176 OCT 2006 2006
ISSN: 0362-2525
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: The nasal and frontal horns of two individuals of Ceratotherium simum were examined by x-ray computed tomography (CT scanning), gross observation of sectioned horn, and light microscopy of histological sections of the horn tissue. CT scans of both sets of horns reveal a periodic banding pattern that is evident upon gross observation of

sections as darker bands of tissue. The overlap of these bands in both histological and CT slices suggests the presence of both a photoabsorbent component (melanin) and a radiodense component (calcium phosphate salts, most likely **hydroxyapatite** or octocalcium phosphate). The distribution of these two components in the horns is hypothesized to contribute to the differential wear patterns that produce the characteristic sweeping conical shape of rhinoceros horn from what otherwise (in the absence of wear and UV exposure) would be cylindrical blocks of constantly growing cornified papillary epidermis. Although extant rhinocerotids are unique in possessing a massive entirely keratinous horn that approximates the functions of **keratin** -and-bone horns such as those of bovid artiodactyls, the tissue structures that make up the horn are strikingly convergent with other examples of papillary cornified epidermis found in horses, artiodactyls, cetaceans, and birds.

REGISTRY NUMBERS: 169799-44-4: **keratin** ; 10103-46-5: calcium phosphate
DESCRIPTORS:
MAJOR CONCEPTS: Methods and Techniques; Integumentary System--Chemical Coordination and Homeostasis
BIOSYSTEMATIC NAMES: Rhinocerotidae--Perissodactyla, Mammalia, Vertebrata , Chordata, Animalia
ORGANISMS: Ceratotherium simum {white rhinoceros} (Rhinocerotidae)
ORGANISMS: PARTS ETC: frontal horn; nasal horn; papillary epidermis--integumentary system
COMMON TAXONOMIC TERMS: Animals; Chordates; Mammals; Nonhuman Vertebrates ; Nonhuman Mammals; Perissodactyls; Vertebrates
CHEMICALS & BIOCHEMICALS: **keratin** ; melanin; calcium phosphate
METHODS & EQUIPMENT: light microscopy--laboratory techniques, imaging and microscopy techniques; X-ray computed tomography--laboratory techniques, imaging and microscopy techniques
CONCEPT CODES:
10064 Biochemistry studies - Proteins, peptides and amino acids
10069 Biochemistry studies - Minerals
18504 Integumentary system - Physiology and biochemistry
BIOSYSTEMATIC CODES:
86150 Rhinocerotidae

...ABSTRACT: of both a photoabsorbent component (melanin) and a radiodense component (calcium phosphate salts, most likely **hydroxyapatite** or octocalcium phosphate). The distribution of these two components in the horns is hypothesized to...

...rhinocerotids are unique in possessing a massive entirely keratinous horn that approximates the functions of **keratin** -and-bone horns such as those of bovid artiodactyls, the tissue structures that make up...
...REGISTRY NUMBERS: **keratin** ;
DESCRIPTORS:
CHEMICALS & BIOCHEMICALS: **keratin** ;

3/9,K/2 (Item 2 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

0015091467 BIOSIS NO.: 200400472696
Rapid fabrication of keratin - hydroxyapatite **hybrid sponges toward osteoblast cultivation and differentiation**

AUTHOR: Tachibana Akira; Kaneko Sumika; Tanabe Toshizumi; Yamauchi Kiyoshi (Reprint)
AUTHOR ADDRESS: Grad Sch EngnDept Appl and Bioappl ChemSumiyoshi Ku, Osaka City Univ, Sugimoto 3-3-138, Osaka, 5588585, Japan**Japan
AUTHOR E-MAIL ADDRESS: tatibana@bioa.eng.osaka-cu.ac.jp; Yamauchi@bioa.eng.osaka-cu.ac.jp
JOURNAL: Biomaterials 26 (3): p297-302, 285 January 2005 2005
MEDIUM: print
ISSN: 0142-9612
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Wool **keratin** sponges were reported to be useful scaffolds for long-term and high-density cell cultivation (J. Biotechnol. 93 (2002) 165). The hybrid of the **keratin** sponges with calcium phosphate materials gave the additional function. Two rapid fabrication methods for calcium phosphate hybrid biomaterials were described. Firstly, the CaP-precipitated sponges were obtained by only the immersion of the carboxyl-sponges, chemically introduced with high amount of carboxyl groups on the sponges, in calcium and phosphate ions containing buffers such as PBS(+) for only 1-3 days. Neither sponge, introduced with amino or amido groups or non-treated, gave significant calcium phosphate precipitation. The carboxyl-sponges were mimics of matrix gamma-carboxyglutamic acid protein, which is responsible for osteoblast calcification. Secondly, the **hydroxyapatite** particle suspension was added onto carboxyl-sponges to fabricate trapped sponge. The trapped **hydroxyapatite** particles might interact with **keratin** protein of the sponge walls. Preliminary experiments measuring the expression of alkaline phosphatase, early osteoblast differentiation marker, suggested that both hybrid sponges, CaP-precipitated and trapped sponges, alter the differentiation pattern of preosteoblasts, MC3T3-E1.

REGISTRY NUMBERS: 9001-78-9: alkaline phosphatase; 14127-61-8: calcium ion; 7758-87-4Q: calcium phosphate; 10103-46-5Q: calcium phosphate; 56271-99-9: gamma-carboxyglutamic acid; 1306-06-5: **hydroxyapatite** ; 169799-44-4: **keratin** ; 14265-44-2: phosphate ion
ENZYME COMMISSION NUMBER: EC 3.1.3.1: alkaline phosphatase
DESCRIPTORS:
MAJOR CONCEPTS: Biochemistry and Molecular Biophysics; Cell Biology; Methods and Techniques; Skeletal System--Movement and Support
BIOSYSTEMATIC NAMES: Muridae--Rodentia, Mammalia, Vertebrata, Chordata, Animalia
ORGANISMS: MC3T3E1 cell line (Muridae)--mouse osteoblast cells
ORGANISMS: PARTS ETC: osteoblast--skeletal system, cultivation, differentiation
COMMON TAXONOMIC TERMS: Animals; Chordates; Mammals; Nonhuman Vertebrates ; Nonhuman Mammals; Rodents; Vertebrates
CHEMICALS & BIOCHEMICALS: PBS buffer; alkaline phosphatase--expression; calcium ion; calcium phosphate; carboxyl group; gamma-carboxyglutamic acid; **hydroxyapatite** ; **keratin** ; phosphate ion; wool **keratin**
METHODS & EQUIPMENT: cell fabrication--culturing techniques, laboratory techniques
MISCELLANEOUS TERMS: high density cell cultivation; **keratin** - **hydroxyapatite** hybrid sponge; osteoblast calcification
CONCEPT CODES:

02502 Cytology - General
02506 Cytology - Animal
10060 Biochemistry studies - General
10064 Biochemistry studies - Proteins, peptides and amino acids
10069 Biochemistry studies - Minerals
10802 Enzymes - General and comparative studies: coenzymes
18004 Bones, joints, fasciae, connective and adipose tissue - Physiology and biochemistry
BIOSYSTEMATIC CODES:
86375 Muridae

Rapid fabrication of keratin - hydroxyapatite **hybrid sponges toward osteoblast cultivation and differentiation**

ABSTRACT: Wool **keratin** sponges were reported to be useful scaffolds for long-term and high-density cell cultivation (J. Biotechnol. 93 (2002) 165). The hybrid of the **keratin** sponges with calcium phosphate materials gave the additional function. Two rapid fabrication methods for calcium...

...mimics of matrix gamma-carboxyglutamic acid protein, which is responsible for osteoblast calcification. Secondly, the **hydroxyapatite** particle suspension was added onto carboxyl-sponges to fabricate trapped sponge. The trapped **hydroxyapatite** particles might interact with **keratin** protein of the sponge walls. Preliminary experiments measuring the expression of alkaline phosphatase, early osteoblast...
...REGISTRY NUMBERS: **hydroxyapatite** ; ...

... **keratin** ;
DESCRIPTORS:
CHEMICALS & BIOCHEMICALS: ... **hydroxyapatite** ; ...

... **keratin** ; ...

...wool **keratin**
MISCELLANEOUS TERMS: ... **keratin** - **hydroxyapatite** hybrid sponge

3/9,K/3 (Item 3 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

0013550978 BIOSIS NO.: 200200144489
Isolation of Thermoanaerobacter keratinophilus sp. nov., a novel thermophilic, anaerobic bacterium with keratinolytic activity
AUTHOR: Riessen Sabine (Reprint); Antranikian Garabed
AUTHOR ADDRESS: Institute of Technical Microbiology, Technical University Hamburg-Harburg, Kasernenstr. 12, D-21073, Hamburg, Germany**Germany
JOURNAL: Extremophiles 5 (6): p399-408 December, 2001 2001
MEDIUM: print
ISSN: 1431-0651
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Several thermophilic anaerobic bacteria with keratinolytic activity growing at temperatures between 50degreeC and 90degreeC were

isolated from samples collected on the island of Sao Miguel in the Azores (Portugal). On the basis of morphological, physiological, and 16S rDNA studies, the isolate 2KXI was identified as a new species of the genus Thermoanaerobacter, designated Thermoanaerobacter keratinophilus. This strain, which grows optimally at 70degreeC, pH 7.0, and 0.5% NaCl, is the first member of the genus Thermoanaerobacter that has been described for its ability to degrade native **keratin** . Around 70% of native wool was solubilized after 10 days of incubation under anaerobic conditions. The strain was shown to possess intracellular and extracellular proteases optimally active at 60degreeC, pH 7.0, and 85degreeC, pH 8.0, respectively. **Keratin** hydrolysis was demonstrated in vitro using a sodium dodecyl sulfate gel containing feather meal. The extracellular protease responsible for breaking down **keratin** fibers was purified to homogeneity in only one step by applying **hydroxyapatite** column chromatography. The enzyme belongs to the serine-type proteases and has a molecular mass of 135 kDa.

REGISTRY NUMBERS: 169799-44-4: **keratin** ; 9001-92-7: protease; 37259-58-8: serine-type proteases
DESCRIPTORS:
MAJOR CONCEPTS: Bacteriology; Methods and Techniques; Systematics and Taxonomy
BIOSYSTEMATIC NAMES: Irregular Nonsporing Gram-Positive Rods--Actinomycetes and Related Organisms, Eubacteria, Bacteria, Microorganisms
ORGANISMS: Thermoanaerobacter (Irregular Nonsporing Gram-Positive Rods); Thermoanaerobacter keratinophilus (Irregular Nonsporing Gram-Positive Rods)--isolation, new species, thermophilic anaerobic bacterium
COMMON TAXONOMIC TERMS: Bacteria; Eubacteria; Microorganisms
CHEMICALS & BIOCHEMICALS: **keratin** --hydrolysis; protease--extracellular, intracellular; serine-type proteases
METHODS & EQUIPMENT: 16S rDNA study {16S ribosomal DNA study}--analytical method, molecular genetic method; SDS-polyacrylamide gel electrophoresis {SDS-PAGE}--detection method; **hydroxyapatite** column chromatography--purification method
GEOGRAPHICAL NAME: Sao Miguel (Portugal, Europe) (Palearctic region)
MISCELLANEOUS TERMS: keratinolytic activity
CONCEPT CODES:
00504 General biology - Taxonomy, nomenclature and terminology
10064 Biochemistry studies - Proteins, peptides and amino acids
10802 Enzymes - General and comparative studies: coenzymes
30000 Bacteriology, general and systematic
31000 Physiology and biochemistry of bacteria
BIOSYSTEMATIC CODES:
08890 Irregular Nonsporing Gram-Positive Rods

...ABSTRACT: member of the genus Thermoanaerobacter that has been described for its ability to degrade native **keratin** . Around 70% of native wool was solubilized after 10 days of incubation under anaerobic conditions...
...extracellular proteases optimally active at 60degreeC, pH 7.0, and 85degreeC, pH 8.0, respectively. **Keratin** hydrolysis was demonstrated in vitro using a sodium dodecyl sulfate gel containing feather meal. The extracellular protease responsible for breaking down **keratin** fibers was purified to homogeneity in only one step by applying **hydroxyapatite** column chromatography. The enzyme belongs to the serine-type proteases and has a molecular mass...
...REGISTRY NUMBERS: **keratin** ;

DESCRIPTORS:
CHEMICALS & BIOCHEMICALS: **keratin** --
...METHODS & EQUIPMENT: **hydroxyapatite** column chromatography

3/9,K/4 (Item 4 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

0010324311 BIOSIS NO.: 199698792144
The mineralization of crystalline inorganic components in Japanese serow horn
AUTHOR: Hashiguchi Kunio; Hashimoto Kenji
AUTHOR ADDRESS: Dep. Oral Surgery, Hamamatsu Univ. Sch. Med., 3600 Handa-cho, Hamamatsu, Shizuoka 431-31, Japan**Japan
JOURNAL: Okajimas Folia Anatomica Japonica 72 (5): p235-244 1995 1995
ISSN: 0030-154X
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: The Japanese serow (Capricornis crispus) is protected as a special natural monument in Japan. The ring count of the soft X-ray photographs of Japanese serow horn was found to be a useful criteria to determine the ages exactly. The mineralization process in Japanese serow horn was examined microscopic, ICP and X-ray diffraction methods. The incremental lines appeared as light and dark layers in the section stained for fuchsin and methylen blue. Mineral depositions were observed among the **keratin** fibers, no matrix vesicle in the electron dense regions. X-ray diffraction pattern of crystalline inorganic components in Japanese serow horn was determined as beta-tricalcium phosphate (TCP), **hydroxyapatite** (HA) and unknown phase. ICP measurement was also carried out. The horn contained trace elements of K besides Na, Ca, Fe and P. The Ca/P molar was found to be 2.9. The ratio was much higher than the theoretical value of HA. Presumably, **keratin** was the seed which might be related to mineralization and higher Ca activity was detected in the initial phase of epitaxial growth. Analytical results of the measurement of trace elements in Japanese serow horn by using ICP method seemed to be correlated with the evaluation of environmental conditions. The present study indicated that the mineralization of Japanese serow horn directly related with deposition Ca-deficient HA among the **keratin** fibers.

REGISTRY NUMBERS: 7758-87-4: BETA-TRICALCIUM PHOSPHATE; 1306-06-5: **HYDROXYAPATITE** ; 7440-09-7: POTASSIUM; 7440-23-5: SODIUM; 7440-70-2: CALCIUM; 7439-89-6: IRON; 7723-14-0: PHOSPHORUS
DESCRIPTORS:
MAJOR CONCEPTS: Development; Integumentary System--Chemical Coordination and Homeostasis; Metabolism; Morphology; Radiology--Medical Sciences; Skeletal System--Movement and Support
BIOSYSTEMATIC NAMES: Bovidae--Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia
ORGANISMS: Capricornis crispus (Bovidae)
COMMON TAXONOMIC TERMS: Animals; Artiodactyls; Chordates; Mammals; Nonhuman Vertebrates; Nonhuman Mammals; Vertebrates
CHEMICALS & BIOCHEMICALS: BETA-TRICALCIUM PHOSPHATE; **HYDROXYAPATITE** ; POTASSIUM; SODIUM; CALCIUM; IRON; PHOSPHORUS
MISCELLANEOUS TERMS: AGE; ANATOMY; BETA-TRICALCIUM PHOSPHATE; CALCIUM;

EPIDERMAL MINERALIZATION; EPITAXIAL GROWTH; **HYDROXYAPATITE** ; IRON; **KERATIN** FIBER; MICROSCOPY; MINERAL DEPOSITION; PHOSPHORUS; POTASSIUM; SODIUM; TRACE ELEMENT; X-RAY DIFFRACTION TECHNIQUE

CONCEPT CODES:
06504 Radiation biology - Radiation and isotope techniques
10060 Biochemistry studies - General
10064 Biochemistry studies - Proteins, peptides and amino acids
10069 Biochemistry studies - Minerals
11106 Anatomy and Histology - Radiologic anatomy
11108 Anatomy and Histology - Microscopic and ultramicroscopic anatomy
13002 Metabolism - General metabolism and metabolic pathways
13010 Metabolism - Minerals
13012 Metabolism - Proteins, peptides and amino acids
18002 Bones, joints, fasciae, connective and adipose tissue - Anatomy
18004 Bones, joints, fasciae, connective and adipose tissue - Physiology and biochemistry
18502 Integumentary system - Anatomy
18504 Integumentary system - Physiology and biochemistry
25508 Development and Embryology - Morphogenesis

BIOSYSTEMATIC CODES:
85715 Bovidae

...ABSTRACT: in the section stained for fuchsin and methylen blue. Mineral depositions were observed among the **keratin** fibers, no matrix vesicle in the electron dense regions. X-ray diffraction pattern of crystalline inorganic components in Japanese serow horn was determined as beta-tricalcium phosphate (TCP), **hydroxyapatite** (HA) and unknown phase. ICP measurement was also carried out. The horn contained trace elements ...

...be 2.9. The ratio was much higher than the theoretical value of HA. Presumably, **keratin** was the seed which might be related to mineralization and higher Ca activity was detected...

...the mineralization of Japanese serow horn directly related with deposition Ca-deficient HA among the **keratin** fibers.

...REGISTRY NUMBERS: **HYDROXYAPATITE** ;

DESCRIPTORS:
CHEMICALS & BIOCHEMICALS: ... **HYDROXYAPATITE** ;
MISCELLANEOUS TERMS: ... **HYDROXYAPATITE** ; ...

... **KERATIN** FIBER

3/9,K/5 (Item 5 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

0007376034 BIOSIS NO.: 199140018925
ESTABLISHMENT OF A HUMAN GINGIVAL EPITHELIAL CELL LINE WITH ACTIVITY OF KERATIN SYNTHESIS
AUTHOR: ISHIKAWA K (Reprint); MOCHII M; AGATA K; EGUCHI G
AUTHOR ADDRESS: DEP DEV BIOL, NATL INST BASIC BIOL, OKAZAKI 444, JPN**JAPAN
JOURNAL: Development Growth and Differentiation 32 (4): p414 1990
CONFERENCE/MEETING: 23RD ANNUAL MEETING OF THE JAPANESE SOCIETY OF DEVELOPMENTAL BIOLOGISTS, HIROSHIMA, JAPAN, MAY 24-26, 1990. DEV GROWTH DIFFER.

ISSN: 0012-1592
DOCUMENT TYPE: Meeting
RECORD TYPE: Citation
LANGUAGE: ENGLISH
DESCRIPTORS: ABSTRACT HUMAN ORAL SURGERY IN-VITRO EXPERIMENTAL SYSTEMS **HYDROXYAPATITE** TISSUE CULTURE CLONAL SELECTION TECHNIQUES DEVELOPMENTAL RESEARCH ADHESION SPREADING GROWTH
DESCRIPTORS:
MAJOR CONCEPTS: Biochemistry and Molecular Biophysics; Cell Biology; Dental and Oral System--Ingestion and Assimilation; Development; Methods and Techniques
BIOSYSTEMATIC NAMES: Hominidae--Primates, Mammalia, Vertebrata, Chordata, Animalia
COMMON TAXONOMIC TERMS: Animals; Chordates; Humans; Mammals; Primates; Vertebrates
CONCEPT CODES:
00520 General biology - Symposia, transactions and proceedings
02508 Cytology - Human
10054 Biochemistry methods - Proteins, peptides and amino acids
10060 Biochemistry studies - General
10064 Biochemistry studies - Proteins, peptides and amino acids
11105 Anatomy and Histology - Surgery
19001 Dental - General and methods
19002 Dental - Anatomy
19004 Dental - Physiology and biochemistry
25504 Development and Embryology - Experimental
25508 Development and Embryology - Morphogenesis
32500 Tissue culture, apparatus, methods and media
BIOSYSTEMATIC CODES:
86215 Hominidae

ESTABLISHMENT OF A HUMAN GINGIVAL EPITHELIAL CELL LINE WITH ACTIVITY OF KERATIN SYNTHESIS
DESCRIPTORS: ABSTRACT HUMAN ORAL SURGERY IN-VITRO EXPERIMENTAL SYSTEMS **HYDROXYAPATITE** TISSUE CULTURE CLONAL SELECTION TECHNIQUES DEVELOPMENTAL RESEARCH ADHESION SPREADING GROWTH

3/9,K/6 (Item 6 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

0004312443 BIOSIS NO.: 198478047850
ASPECTS OF THE STRUCTURE AND COMPOSITION OF BALEEN AND SOME EFFECTS OF EXPOSURE TO PETROLEUM HYDRO CARBONS
AUTHOR: ST AUBIN D J (Reprint); STINSON R H; GERACI J R
AUTHOR ADDRESS: WILDLIFE SECT, DEP PATHOL, ONTARIO VET COLL, UNIV GUELPH, GUELPH, ONT, CANADA N1G 2W1**CANADA
JOURNAL: Canadian Journal of Zoology 62 (2): p193-198 1984
ISSN: 0008-4301
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: The structure and composition of baleen from 7 spp. of whales was studied using tensiometry, X-ray diffraction and elemental analysis. Baleen was composed principally of amorphous and .alpha.- **keratin** .

Hydroxyapatite (bone mineral, Ca10 (PO4)6 OH2) was present in all species. Certain elements, Mn, Cu, B, Fe and Ca were more highly concentrated in the fibers than in the matrix of the plate. The breaking strength of baleen plates from fin (Balaenoptera physalus), sei (B. borealis) and gray (Eschrichtius robustus) whales was comparable to that of buffalo horn, in the range of 2-9 .times. 106 N .cntdot. m-2. The stiffness of baleen was somewhat less than that of other keratinized tissues. Treatment with 10% (vol/vol) trichloroacetic acid for 8 days removed most of the Ca salts, denatured .alpha.- **keratin** , and made fin whale plates stronger and stiffer. Exposure to gasoline for 1.5 h or 14 days, crude oil for 8 days, or tar for 21 days resulted in loss of trace elements from baleen and inconsistent changes in **keratin** organization. After tar exposure, fin whale baleen plates were stiffer and stronger. At sea, baleen would be relatively resistant to damage by spilled oil.

REGISTRY NUMBERS: 1306-06-5: HYDROXYLAPATITE; 7440-70-2: CALCIUM; 7439-89-6 : IRON; 7440-42-8: BORON; 7440-50-8: COPPER; 7439-96-5: MANGANESE
DESCRIPTORS: BALAENOPTERA-PHYSALUS BALAENOPTERA-BOREALIS ESCHRICHTIUS-ROBUSTUS **KERATIN** HYDROXYLAPATITE CALCIUM IRON BORON COPPER MANGANESE BREAKING STRENGTH/
DESCRIPTORS:
MAJOR CONCEPTS: Biochemistry and Molecular Biophysics; Digestive System--Ingestion and Assimilation; Pollution Assessment Control and Management ; Toxicology
BIOSYSTEMATIC NAMES: Balaenopteridae--Cetacea, Mammalia, Vertebrata, Chordata, Animalia; Desmodontidae--Chiroptera, Mammalia, Vertebrata, Chordata, Animalia
COMMON TAXONOMIC TERMS: Cetaceans; Animals; Bats; Chordates; Mammals; Nonhuman Vertebrates; Nonhuman Mammals; Vertebrates
CHEMICALS & BIOCHEMICALS: HYDROXYLAPATITE; CALCIUM; IRON; BORON; COPPER ; MANGANESE
CONCEPT CODES:
07512 Ecology: environmental biology - Oceanography
07517 Ecology: environmental biology - Water research and fishery biology
10064 Biochemistry studies - Proteins, peptides and amino acids
10069 Biochemistry studies - Minerals
14002 Digestive system - Anatomy
22506 Toxicology - Environment and industry
37015 Public health - Air, water and soil pollution
BIOSYSTEMATIC CODES:
85810 Balaenopteridae
85850 Desmodontidae

...ABSTRACT: tensiometry, X-ray diffraction and elemental analysis. Baleen was composed principally of amorphous and .alpha.- **keratin** . **Hydroxyapatite** (bone mineral, Ca10 (PO4)6 OH2) was present in all species. Certain elements, Mn, Cu...

...vol/vol) trichloroacetic acid for 8 days removed most of the Ca salts, denatured .alpha.- **keratin** , and made fin whale plates stronger and stiffer. Exposure to gasoline for 1.5 h...

...for 21 days resulted in loss of trace elements from baleen and inconsistent changes in **keratin** organization. After tar exposure, fin whale baleen plates were stiffer and stronger. At sea, baleen...
DESCRIPTORS: BALAENOPTERA-PHYSALUS BALAENOPTERA-BOREALIS ESCHRICHTIUS-ROBUSTUS **KERATIN** HYDROXYLAPATITE CALCIUM IRON BORON COPPER

MANGANESE BREAKING STRENGTH/

3/9,K/7 (Item 7 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

0003895941 BIOSIS NO.: 198375079884
PURIFICATION AND PROPERTIES OF HYALURONIDASE EC-3.2.1.35 FROM HUMAN LIVER DIFFERENCES FROM AND SIMILARITIES TO THE TESTICULAR ENZYME
AUTHOR: GOLD E W (Reprint)
AUTHOR ADDRESS: RESEARCH LAB, OHIO STATE UNIV COLL OF MED, COLUMBUS, OHIO 43210, USA**USA
JOURNAL: Biochemical Journal 205 (1): p69-74 1982
ISSN: 0264-6021
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: Human liver hyaluronidase was purified to homogeneity by (NH4)2SO4 fractionation, chromatography on **hydroxyapatite** and DEAE-cellulose, and preparative disc polyacrylamide-gel electrophoresis. The enzyme had a pH optimum of 3.8-4.0, a MW (determined by gel filtration) of 76,000, and a Km of 0.05 mg/ml for purified human umbilical-cord hyaluronic acid. It generally resembled hyaluronidases studied in other tissues which are believed to be lysosomal, but shared a number of characteristics with a partially purified bovine testicular hyaluronidase. Neither enzyme exhibited inhibition by high concentrations of substrate, but both were competitively inhibited by dermatan sulfate and **keratin** sulfate. Both enzymes exhibited increased activity in the presence of albumin, probably owing to an increased susceptibility of substrate to enzyme action. The liver enzyme was inhibited by NaCl, but the testicular enzyme exhibited an increase in activity in the presence of the salt which was similar to the effect observed with albumin. The different response toward Cl- ion appeared to be the most significant difference between the 2 enzymes.

REGISTRY NUMBERS: 37326-33-3: EC-3.2.1.35; 16887-00-6: CHLORIDE ION
DESCRIPTORS: BOVINE CHLORIDE ION
DESCRIPTORS:
MAJOR CONCEPTS: Biochemistry and Molecular Biophysics; Enzymology--Biochemistry and Molecular Biophysics
BIOSYSTEMATIC NAMES: Bovidae--Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Hominidae--Primates, Mammalia, Vertebrata, Chordata, Animalia
COMMON TAXONOMIC TERMS: Artiodactyls; Nonhuman Vertebrates; Nonhuman Mammals; Animals; Chordates; Humans; Mammals; Primates; Vertebrates
CHEMICALS & BIOCHEMICALS: EC-3.2.1.35; CHLORIDE ION
CONCEPT CODES:
02508 Cytology - Human
10010 Comparative biochemistry
10064 Biochemistry studies - Proteins, peptides and amino acids
10069 Biochemistry studies - Minerals
10504 Biophysics - Methods and techniques
10802 Enzymes - General and comparative studies: coenzymes
10806 Enzymes - Chemical and physical
12100 Movement

14004 Digestive system - Physiology and biochemistry
16504 Reproductive system - Physiology and biochemistry
25502 Development and Embryology - General and descriptive
BIOSYSTEMATIC CODES:
85715 Bovidae
86215 Hominidae

ABSTRACT: Human liver hyaluronidase was purified to homogeneity by (NH4)2SO4 fractionation, chromatography on **hydroxyapatite** and DEAE-cellulose, and preparative disc polyacrylamide-gel electrophoresis. The enzyme had a pH optimum...

...inhibition by high concentrations of substrate, but both were competitively inhibited by dermatan sulfate and **keratin** sulfate. Both enzymes exhibited increased activity in the presence of albumin, probably owing to an...

3/9,K/8 (Item 1 from file: 24)
DIALOG(R)File 24:CSA Life Sciences Abstracts

0001974108 IP ACCESSION NO: 4515338
Identification of tuftelin- and amelogenin-interacting proteins using the yeast two-hybrid system

Paine, CT; Paine, ML; Snead, ML
University of Southern California, School of Dentistry, Center for Craniofacial Molecular Biology, 2250 Alcazar Street, Los Angeles, California 90033, USA

Connective Tissue Research, v 38, n 1-4, p 257-267, 1998
PUBLICATION DATE: 1998

CONFERENCE:
6. Int. Symp. on the Composition, Properties and Fundamental Structure of Tooth Enamel, Lake Arrowhead, CA (USA), 11-15 May 1997

DOCUMENT TYPE: Journal Article; Conference
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 0300-8207
FILE SEGMENT: Calcium & Calcified Tissue Abstracts

ABSTRACT:
Biomineralization of enamel is a complex process that involves the eventual replacement of an extracellular protein matrix by **hydroxyapatite** crystallites. To date four different enamel matrix proteins have been identified; the amelogenins, tuftelin, enamelin and ameloblastin. Assembly of the enamel extracellular matrix from these component proteins is believed to be critical in producing a matrix competent to undergo mineral replacement. Enamel formation is a complex process and additional proteins are likely to have a role in the assembly of the extracellular matrix. In order to identify additional proteins involved in the assembly process, the yeast two-hybrid system developed by Fields and Song (1989) has been implemented. This system allows for the identification of unknown proteins

that interact with proteins of interest. Typically a known protein is used as "bait" to screen a cDNA expression library of interest. In our studies, tuftelin or amelogenin have been used to screen a mouse tooth library produced from one day old pups. A library screening of six million clones with amelogenin as bait resulted in eleven positive clones all of which show high homology to the human leukocyte antigen-B (HLA-B) associated transcript (BAT) family of genes. A library screening of one million clones using tuftelin as the bait identified twenty-one tuftelin-interacting proteins. Ten of these proteins are either **keratin** K5 or **keratin** K6, four are constitutively expressed and the remaining seven are novel. Further characterization of the proteins shown to interact with amelogenin or tuftelin may shed additional light on this complex process of enamel matrix assembly.

DESCRIPTORS: Teeth; Dental enamel; **Keratin** ; Mineralization; Extracellular matrix; Crystallization; **Hydroxyapatite** ; tuftelin; amelogenin; yeast two-hybrid system
SUBJ CATG: 20079, Teeth

ABSTRACT:
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DESCRIPTORS: Teeth; Dental enamel; **Keratin** ; Mineralization; Extracellular matrix; Crystallization; **Hydroxyapatite** ; tuftelin; amelogenin; yeast two-hybrid system

3/9,K/9 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

15540807 Genuine Article#: 081YL Number of References: 33
Title: Structure of white rhinoceros (Ceratotherium simum) horn investigated by X-ray histology with implications computed tomography and for growth and external form
Author(s): Hieronymus TL (REPRINT) ; Witmer LM; Ridgely RC
Corporate Source: Ohio Univ,Dept Sci Biol,Irvine Hall/Athens//OH/45701 (REPRINT); Ohio Univ,Dept Sci Biol,Athens//OH/45701; Ohio Univ,Coll Osteopath Med, Dept Biomed Sci,Athens//OH/45701(Th108702@ohiou.edu)
Journal: JOURNAL OF MORPHOLOGY, 2006, V267, N10 (OCT), P1172-1176
ISSN: 0362-2525 Publication date: 20061000
Publisher: WILEY-LISS, DIV JOHN WILEY & SONS INC, 111 RIVER ST, HOBOKEN, NJ 07030 USA
Language: English Document Type: ARTICLE
Geographic Location: USA
Journal Subject Category: ANATOMY & MORPHOLOGY
Abstract: The nasal and frontal horns of two individuals of Ceratotherium simum were examined by x-ray computed tomography (CT scanning), gross observation of sectioned horn, and light microscopy of histological

sections of the horn tissue. CT scans of both sets of horns reveal a periodic banding pattern that is evident upon gross observation of sections as darker bands of tissue. The overlap of these bands in both histological and CT slices suggests the presence of both a photoabsorbent component (melanin) and a radiodense component (calcium phosphate salts, most likely **hydroxyapatite** or octocalcium phosphate). The distribution of these two components in the horns is hypothesized to contribute to the differential wear patterns that produce the characteristic sweeping conical shape of rhinoceros horn from what otherwise (in the absence of wear and UV exposure) would be cylindrical blocks of constantly growing cornified papillary epidermis. Although extant rhinocerotids are unique in possessing a massive entirely keratinous horn that approximates the functions of **keratin** -and-bone horns such as those of bovid artiodactyls, the tissue structures that make up the horn are strikingly convergent with other examples of papillary cornified epidermis found in horses, artiodactyls, cetaceans, and birds.

Descriptors--Author Keywords: anatomy ; histology ; tomography ; Ceratotherium ; rhinoceros ; integument ; **keratin** ; horn
Identifiers--KeyWord Plus(R): MECHANICAL-PROPERTIES; FRACTURE-TOUGHNESS; FEATHER **KERATIN** ; HOOF **KERATIN** ; DESIGN; PHASE; BILL; BONE

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...Abstract: of both a photoabsorbent component (melanin) and a radiodense

component (calcium phosphate salts, most likely **hydroxyapatite** or octocalcium phosphate). The distribution of these two components in the horns is hypothesized to...

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...Identifiers--MECHANICAL-PROPERTIES; FRACTURE-TOUGHNESS; FEATHER **KERATIN** ; HOOF **KERATIN** ; DESIGN; PHASE; BILL; BONE

3/9,K/10 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

14609630 Genuine Article#: 988SL Number of References: 62
Title: Applications of X-ray powder diffraction in materials chemistry
Author(s): Skakle J (REPRINT)
Corporate Source: Univ Aberdeen,Dept Chem,Meston Walk/Aberdeen AB24 3UE//Scotland/ (REPRINT); Univ Aberdeen,Dept Chem,Aberdeen AB24 3UE//Scotland/(j.skakle@abdn.ac.uk)
Journal: CHEMICAL RECORD, 2005, V5, N5, P252-262
ISSN: 1527-8999 Publication date: 20050000
Publisher: JOHN WILEY & SONS INC, 111 RIVER ST, HOBOKEN, NJ 07030 USA
Language: English Document Type: ARTICLE
Geographic Location: Scotland
Journal Subject Category: CHEMISTRY, MULTIDISCIPLINARY
Abstract: X-ray powder diffraction is a standard technique in materials chemistry, yet it is often still used in the laboratory as a "one-hit" technique, e.g. for fingerprinting and following the progress of reactions. It is important, however, that the wealth of information available from powder data is not overlooked. While it is only possible here to scratch the surface of possibilities, a range of examples from our research is used to emphasize some of the more accessible techniques and to highlight successes as well as potential problems. The first example is the study of solid solution formation in the oxide systems Ba3-3xLa2xV2O8 and Sr4-xBaxMn3O10 and in the silicate-**hydroxyapatite** bioceramic, Ca-10(PO4)(6-x)(SiO4)(x)(OH)(2-x). Database mining is also explored, using three phases within the pseudobinary phase diagram Li3SbO4-CuO as examples. All three phases presented different challenges: the structure of Li3SbO4 had been previously reported in higher symmetry than was actually the case, Li3Cu2SbO6 was found to be isostructural with Li2TiO3 but the cation ordering had to be rationalized, and Li3CuSbO5 was believed to be triclinic, presenting challenges in indexing the powder pattern. Quantitative phase analysis is briefly discussed, with the emphasis both on success (determination of amorphous phase content in a novel cadmium arsenate phase) and on possible failure (compositional analysis in bone mineral); the reasons for the problems in the latter are also explored. Finally, the use of an area detector system has been shown to be of value in the study of orientational effects (or lack of them) in non- and partially-ordered biomaterials, including p-HEMA, annulus fibrosis of lumbar discs, and **keratin** in the horn of cow's hooves. (c) 2005 The Japan Chemical Journal Forum and Wiley Periodicals, Inc.
Descriptors--Author Keywords: x-ray diffraction ; solid state structures ; analytical methods
Identifiers--KeyWord Plus(R): CRYSTAL-STRUCTURE DETERMINATION; GENETIC

ALGORITHM; DAIRY-CATTLE; RATIO; **HYDROXYAPATITE;** PREDICTION; LAMENESS; COLLAGEN; LI3SBO4; PHASES

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...Abstract: solution formation in the oxide systems Ba3-3xLa2xV2O8 and Sr4-xBaxMn3O10 and in the silicate- **hydroxyapatite** bioceramic, Ca-10(PO4)(6-x)(SiO4)(x)(OH)(2-x). Database mining is also...

...in non- and partially-ordered biomaterials, including p-HEMA, annulus fibrosis of lumbar discs, and **keratin** in the horn of cow's hooves. (c) 2005 The Japan Chemical Journal Forum and...
...Identifiers--CRYSTAL-STRUCTURE DETERMINATION; GENETIC ALGORITHM; DAIRY-CATTLE; RATIO; **HYDROXYAPATITE;** PREDICTION; LAMENESS; COLLAGEN; LI3SBO4; PHASES
? t s3/9,k/11-21

3/9,K/11 (Item 3 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

13190177 Genuine Article#: 855ZW Number of References: 17
Title: Rapid fabrication of keratin - hydroxyapatite hybrid sponges toward osteoblast cultivation and differentiation
Author(s): Tachibana A; Kaneko S; Tanabe T; Yamauchi K (REPRINT)
Corporate Source: Osaka City Univ,Grad Sch Engn, Dept Appl & Bioappl Chem, Sumiyoshi Ku,Sugimoto 3-3-138/Osaka 5588585//Japan/ (REPRINT); Osaka City Univ,Grad Sch Engn, Dept Appl & Bioappl Chem, Sumiyoshi Ku,Osaka 5588585//Japan/(tatibana@bioa.eng.osaka-cu.ac.jp; Yamauchi@bioa.eng.osaka-cu.ac.jp)
Journal: BIOMATERIALS, 2005, V26, N3 (JAN), P297-302
ISSN: 0142-9612 Publication date: 20050100
Publisher: ELSEVIER SCI LTD, THE BOULEVARD, LANGFORD LANE, KIDLINGTON, OXFORD OX5 1GB, OXON, ENGLAND
Language: English Document Type: ARTICLE
Geographic Location: Japan
Journal Subject Category: ENGINEERING, BIOMEDICAL; MATERIALS SCIENCE, BIOMATERIALS
Abstract: Wool **keratin** sponges were reported to be useful scaffolds for long-term and high-density cell cultivation (J. Biotechnol. 93 (2002) 165). The hybrid of the **keratin** sponges with calcium phosphate materials gave the additional function. Two rapid fabrication methods for calcium phosphate hybrid biomaterials were described. Firstly, the CaP-precipitated sponges were obtained by only the immersion of the carboxyl-sponges, chemically introduced with high amount of carboxyl groups on the sponges, in calcium and phosphate ions containing buffers such as PBS(+) for only 1-3 days. Neither sponge, introduced with amino or amido groups or non-treated, gave significant calcium phosphate precipitation. The carboxyl-sponges were mimics of matrix gamma-carboxyglutamic acid protein, which is responsible for osteoblast calcification. Secondly, the **hydroxyapatite** particle suspension was added onto carboxyl-sponges to fabricate trapped sponge. The trapped **hydroxyapatite** particles might interact with **keratin** protein of the

sponge walls. Preliminary experiments measuring the expression of alkaline phosphatase, early osteoblast differentiation marker, suggested that both hybrid sponges, CaP-precipitated and trapped sponges, alter the differentiation pattern of preosteoblasts, MC3T3-E1.

Descriptors--Author Keywords: wool **keratin** sponge ; **hydroxyapatite** hybrid ; osteoblast scaffolds ; osteoblast differentiation
Identifiers--KeyWord Plus(R): BONE-LIKE APATITE; BIOMATERIAL; LYSOZYME; COLLAGEN; PROTEIN; GROWTH; ASSAY; CELLS
Cited References:

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Title: Rapid fabrication of keratin - hydroxyapatite **hybrid sponges toward osteoblast cultivation and differentiation**
Abstract: Wool **keratin** sponges were reported to be useful scaffolds for long-term and high-density cell cultivation (J. Biotechnol. 93 (2002) 165). The hybrid of the **keratin** sponges with calcium phosphate materials gave the additional function. Two rapid fabrication methods for calcium...

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3/9,K/12 (Item 4 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

13112099 Genuine Article#: 849ZP Number of References: 28
Title: Characterization of Prismalin-14, a novel matrix protein from the prismatic layer of the Japanese pearl oyster (Pinctada fucata)
Author(s): Suzuki M; Murayama E; Inoue H; Ozaki N; Tohse H; Kogure T; Nagasawa H (REPRINT)
Corporate Source: Univ Tokyo,Dept Appl Biol Chem, Grad Sch Agr & Life Sci, Bunkyo Ku,1-1-1 Yayoi/Tokyo 1138657//Japan/ (REPRINT); Univ Tokyo,Dept Appl Biol Chem, Grad Sch Agr & Life Sci, Bunkyo Ku,Tokyo 1138657//Japan/; Japan Sci & Technol Agcy,CREST,Saitama 3320012//Japan/

; Univ Tokyo,Dept Earth & Planetary Sci, Grad Sch Sci, Bunkyo Ku,Tokyo 1130033//Japan/(anagahi@mail.ecc.u-tokyo.ac.jp)
Journal: BIOCHEMICAL JOURNAL, 2004, V382, 1 (AUG 15), P205-213
ISSN: 0264-6021 Publication date: 20040815
Publisher: PORTLAND PRESS, 59 PORTLAND PLACE, LONDON W1N 3AJ, ENGLAND
Language: English Document Type: ARTICLE
Geographic Location: Japan
Journal Subject Category: BIOCHEMISTRY & MOLECULAR BIOLOGY
Abstract: The mollusc shell is a hard tissue consisting of calcium carbonate and organic matrices. The organic matrices are believed to play important roles in shell formation. In the present study, we extracted and purified a novel matrix protein, named Prismalin-14, from the acid-insoluble fraction of the prismatic layer of the shell of the Japanese pearl oyster (Pinctada fucata), and determined its whole amino acid sequence by a combination of amino acid sequence analysis and MS analysis of the intact protein and its enzymic digests. Prismalin-14 consisted of 105 amino acid residues, including PIYR repeats, a Gly/Tyr-rich region and N- and C-terminal Asp-rich regions. Prismalin-14 showed inhibitory activity on calcium carbonate precipitation and calcium-binding activity in vitro. The scanning electron microscopy images revealed that Prismalin-14 affected the crystallization of calcium carbonate in vitro. A cDNA encoding Prismalin-14 was cloned and its expression was analysed. The amino acid sequence deduced from the nucleotide sequence of Prismalin-14 cDNA was identical with that determined by peptide sequencing. Northern-blot analysis showed that a Prismalin-14 mRNA was expressed only at the mantle edge. In situ hybridization demonstrated that a Prismalin-14 mRNA was expressed strongly in the inner side of the outer fold of the mantle. These results suggest that Prismalin-14 is a framework protein that plays an important role in the regulation of calcification of the prismatic layer of the shell.
Descriptors--Author Keywords: biomineralization ; calcification ; matrix protein ; mollusc shell ; pearl oyster ; prismatic layer
Identifiers--KeyWord Plus(R): ANTI-CALCIFICATION; MOLECULAR-CLONING; NACREOUS LAYER; BINDING; SHELL; EXPRESSION; **KERATIN;** CDNA; **HYDROXYAPATITE;** CRAYFISH
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ZHANG Y, 2003, V135, P565, COMP BIOCHEM PHYS B

...Identifiers--ANTI-CALCIFICATION; MOLECULAR-CLONING; NACREOUS LAYER; BINDING; SHELL; EXPRESSION; **KERATIN**; CDNA; **HYDROXYAPATITE**; CRAYFISH

3/9,K/13 (Item 5 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

12896914 Genuine Article#: 829WK Number of References: 95
Title: The mechanical efficiency of natural materials
Author(s): Wegst UGK; Ashby MF (REPRINT)
Corporate Source: Univ Cambridge,Dept Engn, Engn Design Ctr,Trumpington St/Cambridge CB2 1PZ//England/ (REPRINT); Univ Cambridge,Dept Engn, Engn Design Ctr,Cambridge CB2 1PZ//England/; Max Planck Inst Met Res,D-70569 Stuttgart//Germany/(mfaz@eng.cam.ac.uk)
Journal: PHILOSOPHICAL MAGAZINE, 2004, V84, N21 (JUL 21), P2167-2181
ISSN: 1478-6443 Publication date: 20040721
Publisher: TAYLOR & FRANCIS LTD, 4 PARK SQUARE, MILTON PARK, ABINGDON OX14 4RN, OXON, ENGLAND
Language: English Document Type: REVIEW
Geographic Location: England; Germany
Journal Subject Category: MATERIALS SCIENCE, MULTIDISCIPLINARY; MECHANICS; METALLURGY & METALLURGICAL ENGINEERING; PHYSICS, APPLIED; PHYSICS, CONDENSED MATTER
Abstract: The materials of nature, for example cellulose, lignin, **keratin**, chitin, collagen and **hydroxyapatite**, and the structures made from them, for example bamboo, wood, antler and bone, have a remarkable range of mechanical properties. These can be compared by presenting them as material property charts, well known for the materials of engineering. Material indices (significant combinations of properties) can be plotted on to the charts, identifying materials with extreme values of an index, suggesting that they have evolved to carry particular modes of loading, or to sustain large tensile or flexural deformations, without failure. This paper describes a major revision and update of a set of property charts for natural material published some 8 years ago by Ashby et al. with examples of their use to study mechanical efficiency in nature.
Identifiers--KeyWord Plus(R): WALLABY TAIL TENDONS; TRABECULAR BONE; CONSTITUTIVE-EQUATIONS; FRACTURE PROPERTIES; MAMMALIAN TENDONS; PATELLAR TENDON; CANCELLOUS BONE; MACADAMIA NUTS; CORAL SKELETON; BEHAVIOR
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Abstract: The materials of nature, for example cellulose, lignin, **keratin** , chitin, collagen and **hydroxyapatite** , and the structures made from them, for example bamboo, wood, antler and bone, have a...

3/9,K/14 (Item 6 from file: 34)

10435091 Genuine Article#: 528XF Number of References: 41

Title: Bone tissue fluorescence reduction for visible laser Raman spectroscopy

Author(s): Shea DA; Morris MD (REPRINT)
Corporate Source: Univ Michigan,Dept Chem,Ann Arbor//MI/48109 (REPRINT); Univ Michigan,Dept Chem,Ann Arbor//MI/48109

Journal: APPLIED SPECTROSCOPY, 2002, V56, N2 (FEB), P182-186
ISSN: 0003-7028 Publication date: 20020200
Publisher: SOC APPLIED SPECTROSCOPY, 201B BROADWAY ST, FREDERICK, MD 21701 USA
Language: English Document Type: ARTICLE
Geographic Location: USA
Journal Subject Category: INSTRUMENTS & INSTRUMENTATION; SPECTROSCOPY

Abstract: We report the successful reduction of background fluorescence in bone tissue by photo-irradiation with green laser light. Irradiation of

bone tissue with intense green light has been shown to be non-destructive and to reduce permanently over 70% of the fluorescence background. The laser power dependence of the fluorescence reduction was found to be nonlinear.

Descriptors--Author Keywords: Raman spectroscopy ; bone ; photobleaching ; principal components analysis ; factor analysis

Identifiers--KeyWord Plus(R): UV-RADIATION; COLLAGEN; **HYDROXYAPATITE;** PHOTODEGRADATION; SPECTRA; **KERATIN;** CELLS

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...Identifiers--UV-RADIATION; COLLAGEN; **HYDROXYAPATITE;** PHOTODEGRADATION; SPECTRA; **KERATIN;** CELLS

3/9,K/15 (Item 7 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

07282281 Genuine Article#: 145WF Number of References: 56
Title: Identification of tuftelin- and amelogenin-interacting proteins using the yeast two-hybrid system
Author(s): Paine CT (REPRINT) ; Paine ML; Snead ML
Corporate Source: UNIV SO CALIF,CTR CRANIOFACIAL MOL BIOL, SCH DENT, 2250 ALCAZAR ST/LOS ANGELES//CA/90033 (REPRINT)
Journal: CONNECTIVE TISSUE RESEARCH, 1998, V39, N1-3, P257-267
ISSN: 0300-8207 Publication date: 19980000
Publisher: GORDON BREACH SCI PUBL LTD, C/O STBS LTD, PO BOX 90, READING RG1 8JL, BERKS, ENGLAND
Language: English Document Type: ARTICLE
Geographic Location: USA
Subfile: CC LIFE--Current Contents, Life Sciences;
Journal Subject Category: ORTHOPEDICS; CELL BIOLOGY
Abstract: Biomineralization of enamel is a complex process that involves the eventual replacement of an extracellular protein matrix by **hydroxyapatite** crystallites. To date four different enamel matrix proteins have been identified; the amelogenins, tuftelin, enamelin and ameloblastin. Assembly of the enamel extracellular matrix from these component proteins is believed to be critical in producing a matrix competent to undergo mineral replacement. Enamel formation is a complex: process and additional proteins are likely to have a role in the assembly of the extracellular matrix. In order to identify additional proteins involved in the assembly process, the yeast two-hybrid system developed by Fields and Song (1989) has been implemented. This system allows for the identification of unknown proteins that interact with proteins of interest. Typically a known protein is used as ''bait'' to screen a cDNA expression library of interest. In our studies, tuftelin or amelogenin have been used to screen a mouse teeth library produced from one day old pups, A library screening of six million clones with amelogenin as bait resulted in eleven positive clones all of which show high homology to the human leukocyte antigen-B (HLA-B) associated transcript (BAT) family of genes. A library screening of one million clones using tuftelin as the bait identified twenty-one tuftelin-interacting proteins. Ten of these proteins are either **keratin** K5 or **keratin** K6, four are constitutively expressed and the remaining seven are novel. Further characterization of the proteins shown to interact with amelogenin or tuftelin may shed additional light on this complex process of enamel matrix assembly.
Descriptors--Author Keywords: biomineralization ; enamel cDNA expression library ; self-assembly and odontogenesis
Identifiers--KeyWord Plus(R): ENAMELIN TUFTELIN; TOOTH DEVELOPMENT; GENE-EXPRESSION; DNA-POLYMERASE; MOUSE; SEQUENCE; MATRIX; DIFFERENTIATION; ORGANOGENESIS; LOCALIZATION
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...Abstract: is a complex process that involves the eventual replacement of an extracellular protein matrix by **hydroxyapatite** crystallites. To date four different enamel matrix proteins have been identified; the amelogenins, tuftelin, enamelin...

...as the bait identified twenty-one tuftelin-interacting proteins. Ten of these proteins are either **keratin** K5 or **keratin** K6, four are constitutively expressed and the remaining seven are novel. Further characterization of the...

3/9,K/16 (Item 8 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

05198600 Genuine Article#: VG397 Number of References: 47
Title: THE LOCALIZATION OF EPITHELIAL ROOT SHEATH-CELLS DURING CEMENTUM FORMATION IN RAT MOLARS
Author(s): ALATLI I; LUNDMARK C; HAMMARSTROM L
Corporate Source: KAROLINSKA INST,CTR ORAL BIOL,NOVUM,BOX 4064/S-14104 HUDDINGE//SWEDEN/
Journal: JOURNAL OF PERIODONTAL RESEARCH, 1996, V31, N6 (AUG), P433-440
ISSN: 0022-3484
Language: ENGLISH Document Type: ARTICLE
Geographic Location: SWEDEN
Subfile: SciSearch; CC LIFE--Current Contents, Life Sciences
Journal Subject Category: DENTISTRY/ORAL SURGERY & MEDICINE
Abstract: The purpose of this study was to investigate the distribution of epithelial cells and the fate of the basement membrane along the root surface of rat molars during cementogenesis, and to test the hypothesis that the Hertwig's epithelial root sheath (HERS) cells remain on the root surface if mineralization is inhibited. To demonstrate the HERS cells and basement membrane, immunohistochemistry with antibodies against **keratin** and laminin were used. The dentin matrix mineralization was inhibited by a single injection of 1-hydroxyethylidene-1,1-bisphosphonate (HEBP). A modified Gomori staining method was used to monitor the inhibition of mineral formation in dentin and cementum. Paraffin sections were stained with haematoxylin-eosin, and freeze-dried sections were used for Gomori and immunohistochemical stainings. We found that the formation of acellular cementum was suppressed above the dentin with inhibited mineralization. Instead, a hyperplastic matrix, different from acellular cementum, covered the dentin. This hyperplastic cementum had **keratin** - and laminin-positive cells incorporated; such cells were never incorporated in normal acellular cementum. The later formation of cellular cementum correlated, in controls, with the disappearance of HERS cells from the root surface. Treatment with HEBP resulted in a persistent presence of epithelial cells, interpreted as an inhibition of their disappearance. In conclusion, there is evidence that the cells of HERS are involved in the development of both acellular and cellular cementum. The developmental processes of these tissues appear in some way to be influenced by or associated with the initial mineralization of the dentin.
Descriptors--Author Keywords: CEMENTUM ; HERS ; **KERATIN** ; LAMININ ; HEBP
Identifiers--KeyWords Plus: INTERMEDIATE CEMENTUM; BASEMENT-MEMBRANE; DENTIN; MOUSE; **HYDROXYAPATITE**; PERIODONTIUM; LAMININ; HERTWIG; ENAMEL; MONKEY
Research Fronts: 94-4329 001 (K12 **KERATIN** IN RABBIT CORNEAL LIMBAL EPITHELIAL-CELLS; CYTOKERATIN EXPRESSION; INTERMEDIATE FILAMENT PROTEIN; DIAGNOSIS OF EPIDERMOLYSIS-BULLOSA SIMPLEX)
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...Abstract: mineralization is inhibited. To demonstrate the HERS cells and basement membrane, immunohistochemistry with antibodies against **keratin** and laminin were used. The dentin matrix mineralization was inhibited by a single injection of...

...Instead, a hyperplastic matrix, different from acellular cementum, covered the dentin. This hyperplastic cementum had **keratin** - and laminin-positive cells incorporated; such cells were never incorporated in normal acellular cementum. The...

...Identifiers--INTERMEDIATE CEMENTUM; BASEMENT-MEMBRANE; DENTIN; MOUSE; **HYDROXYAPATITE;** PERIODONTIUM; LAMININ; HERTWIG; ENAMEL; MONKEY

Research Fronts: 94-4329 001 (K12 **KERATIN** IN RABBIT CORNEAL LIMBAL EPITHELIAL-CELLS; CYTOKERATIN EXPRESSION; INTERMEDIATE FILAMENT PROTEIN; DIAGNOSIS OF EPIDERMOLYSIS-BULLOSA...

3/9,K/17 (Item 9 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

03775581 Genuine Article#: QE293 Number of References: 50
Title: ATOMIC-FORCE MICROSCOPY OF THE MORPHOLOGY OF THE MATRIX AND MINERAL COMPONENTS OF THE OTOLITH OF HYPEROGLYPHE ANTARCTICA
Author(s): GAULDIE RW; XHIE J
Corporate Source: UNIV HAWAII,SCH OCEAN & EARTH SCI & TECHNOL,HAWAII INST GEOPHYS & PLANETOL/HONOLULU//HI/96822
Journal: JOURNAL OF MORPHOLOGY, 1995, V223, N2 (FEB), P203-214
ISSN: 0362-2525
Language: ENGLISH Document Type: ARTICLE
Geographic Location: USA
Subfile: SciSearch; CC LIFE--Current Contents, Life Sciences
Journal Subject Category: ANATOMY & MORPHOLOGY
Abstract: The sagittal otolith of Hyperoglyphe antarctica (Centrolophidae: Teleostei) has a prismatic structure in which the anti-sulcal growth axes of each prism consist of a series of nested cones each composed of a mineral layer followed by an organic matrix layer. Broken sections show the mineral layers to be composed of stacks of crystals. Otolith matrix that has been decalcified and air-dried, or critical-point-dried, retains a periodic structure of repeating high and low matrix density. At high magnifications, both broken whole crystal surfaces and decalcified matrix surfaces have a granular structure. Chlorox-bleached whole otoliths also show a granular crystalline structure. At higher magnifications, the air-dried matrix showed a parallel fiber structure with similar dimensions to **keratin** fibers. (C) 1995 Wiley-Liss, Inc.
Identifiers--KeyWords Plus: FISH OTOLITHS; FUNDULUS-HETEROCLITUS; ELECTRON-MICROSCOPE; CALCITE; GROWTH; ULTRASTRUCTURE; TEMPERATURE; ARAGONITE; OTOCONIA; RINGS
Research Fronts: 93-3649 002 (OTOLITH MICROSTRUCTURE; DAILY GROWTH INCREMENTS; FISH AGE VALIDATION; EARLY-LIFE HISTORY EVENTS)
93-0242 001 (CHIRAL STATIONARY PHASES; OPTICAL RESOLUTION; HIGH-PERFORMANCE LIQUID-CHROMATOGRAPHY)
93-0486 001 (ATOMIC FORCE MICROSCOPY; IMAGING SURFACES; RECONSTITUTED BIOLOGICAL CHANNELS AT MOLECULAR RESOLUTION)
93-5794 001 (MIXED MONOLAYERS; ICE NUCLEATION; BIOMIMETIC MATERIALS CHEMISTRY; GELATINOUS MEMBRANE; ORGANIC TEMPLATE)
93-6422 001 (**HYDROXYAPATITE** INDUCTION; INVITRO BEHAVIOR; MACROPOROUS CALCIUM-PHOSPHATE CERAMICS)
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ZHANG Z, 1992, V21, P1, J MORPHOL

...Abstract: higher magnifications, the air-dried matrix showed a parallel fiber structure with similar dimensions to **keratin** fibers. (C) 1995 Wiley-Liss, Inc.
...Research Fronts: 001 (MIXED MONOLAYERS; ICE NUCLEATION; BIOMIMETIC MATERIALS CHEMISTRY; GELATINOUS MEMBRANE; ORGANIC TEMPLATE)
93-6422 001 (**HYDROXYAPATITE** INDUCTION; INVITRO BEHAVIOR; MACROPOROUS CALCIUM-PHOSPHATE CERAMICS)

3/9,K/18 (Item 10 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

00826041 Genuine Article#: FA140 Number of References: 32
Title: CONSTRUCTION OF A UNIFORM-ABUNDANCE (NORMALIZED) CDNA LIBRARY
Author(s): PATANJALI SR; PARIMOO S; WEISSMAN SM
Corporate Source: YALE UNIV,SCH MED,DEPT HUMAN GENET,333 CEDAR ST/NEW HAVEN//CT/06510
Journal: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED

STATES OF AMERICA, 1991, V88, N5, P1943-1947
Language: ENGLISH Document Type: ARTICLE
Geographic Location: USA
Subfile: SciSearch; CC LIFE--Current Contents, Life Sciences
Journal Subject Category: MULTIDISCIPLINARY SCIENCES
Abstract: We have used a kinetic approach to construct cDNA libraries containing approximately equal representations of all sequences in a preparation of poly(A)+ RNA. Randomly primed cDNA fragments of a selected size range were cloned in lambda-phage vector. Inserts were amplified by the polymerase chain reaction (PCR), denatured, and self-annealed under optimized conditions. After extensive but incomplete reannealing, the single-stranded fraction was relatively depleted of more abundant species of cDNA. Libraries of these fragments are suitable for cDNA subtraction, screening, or selection by hybridization and make it possible to detect and analyze cDNA corresponding to species of mRNA present at a low level in a small fraction of the cells in a complex tissue.
Descriptors--Author Keywords: REASSOCIATION; HYBRIDIZATION; **HYDROXYAPATITE**

Identifiers--KeyWords Plus: RIBOSOMAL DNA SEGMENTS; MOLECULAR ANALYSIS; MESSENGER-RNA; HUMAN GENOME; SEQUENCES; GENES; ACID; EXTRACTION; FAMILY
Research Fronts: 89-1447 002 (DEVELOPMENTALLY REGULATED GENE; CAPPING PROTEIN; CDNA SEQUENCE; GENOME ORGANIZATION)
89-3817 002 (POLYMERASE CHAIN-REACTION; AMPLIFIED GENOMIC DNA; DIRECT SEQUENCING)
89-0025 001 (CHLOROPHYLL FLUORESCENCE; PHOTOSYSTEM-II IN PEA LEAVES; DNA-DNA HYBRIDIZATION; MOLECULAR CLOCKS; NON-PHOTOCHEMICAL QUENCHING; THERMAL TOLERANCE)
89-0580 001 (HUMAN IMMUNODEFICIENCY VIRUS; HIV INFECTION; RECOMBINANT SOLUBLE CD4 RECEPTOR; PROTEIN EXPRESSION VIA A CIS-ACTING SEQUENCE)
89-1700 001 (INSITU HYBRIDIZATION USING CHROMOSOME-SPECIFIC ALPHA-SATELLITE DNA; GENOMIC ORGANIZATION; AVIAN **KERATIN** GENES; HIGHLY REPETITIVE SEQUENCE)
89-1708 001 (T-CELL RECEPTOR DELTA-GENES IN HUMAN T-CELL LEUKEMIAS; ANALYSIS OF JUNCTIONAL DIVERSITY; IMPLICATIONS FOR THYMIC DIFFERENTIATION)
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WILSON GN, 1978, V75, P5367, P NATL ACAD SCI USA
WILSON JT, 1978, V5, P563, NUCLEIC ACIDS RES
...Research Fronts: SEQUENCE)
89-1700 001 (INSITU HYBRIDIZATION USING CHROMOSOME-SPECIFIC ALPHA-SATELLITE DNA; GENOMIC ORGANIZATION; AVIAN **KERATIN** GENES; HIGHLY REPETITIVE SEQUENCE)
89-1708 001 (T-CELL RECEPTOR DELTA-GENES IN HUMAN T...

3/9,K/19 (Item 1 from file: 45)
DIALOG(R)File 45:EMCare

01500532 EMCare No: 38950713
Rapid fabrication of keratin - hydroxyapatite **hybrid sponges toward osteoblast cultivation and differentiation**
Tachibana A.; Kaneko S.; Tanabe T.; Yamauchi K.
K. Yamauchi, Dept. of Appl. and Bioapplied Chem., Graduate School of Engineering, Osaka City Univ., S., Osaka Japan
AUTHOR EMAIL: Yamauchi@bioa.eng.osaka-cu.ac.jp
Biomaterials (BIOMATERIALS) (United Kingdom) 2005, 26/3 (297-302)
CODEN: BIMAD ISSN: 0142-9612
PUBLISHER ITEM IDENTIFIER: S014296120400170X
DOCUMENT TYPE: Journal ; Article
LANGUAGE: ENGLISH SUMMARY LANGUAGE: ENGLISH
NUMBER OF REFERENCES: 17
RECORD TYPE: Abstract

Wool **keratin** sponges were reported to be useful scaffolds for long-term and high-density cell cultivation (J. Biotechnol. 93 (2002) 165). The hybrid of the **keratin** sponges with calcium phosphate materials gave the additional function. Two rapid fabrication methods for calcium phosphate hybrid biomaterials were described. Firstly, the CaP-precipitated sponges were obtained by only the immersion of the carboxyl-sponges, chemically introduced with high amount of carboxyl groups on the sponges, in calcium and phosphate ions containing buffers such as PBS(+) for only 1-3 days. Neither sponge, introduced with amino or amido groups or non-treated, gave significant calcium phosphate precipitation. The carboxyl-sponges were mimics of matrix gamma-carboxyglutamic acid protein, which is responsible for osteoblast calcification. Secondly, the **hydroxyapatite** particle suspension was added onto carboxyl-sponges to fabricate trapped sponge. The trapped **hydroxyapatite** particles might interact with **keratin** protein of the sponge walls. Preliminary experiments measuring the expression of alkaline phosphatase, early osteoblast differentiation marker, suggested that both hybrid sponges, CaP-precipitated and trapped sponges, alter the differentiation pattern of preosteoblasts, MC3T3-E1. (c) 2004 Elsevier Ltd. All rights reserved.

DESCRIPTORS:
* **keratin** ; * **hydroxyapatite** ; *osteoblast; *wool
calcium phosphate; 4 carboxyglutamic acid; protein; alkaline phosphatase; marker; acid protein; biomaterial; carboxyl group; calcium; phosphate; precipitation; calcification; cell density; immersion

Rapid fabrication of keratin - hydroxyapatite **hybrid sponges toward osteoblast cultivation and differentiation**

Wool **keratin** sponges were reported to be useful scaffolds for long-term and high-density cell cultivation (J. Biotechnol. 93 (2002) 165). The hybrid of the **keratin** sponges with calcium phosphate materials gave the additional function. Two rapid fabrication methods for calcium...

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DESCRIPTORS:
* **keratin** ; * **hydroxyapatite** ; *osteoblast; *wool

3/9,K/20 (Item 1 from file: 65)
DIALOG(R)File 65:Inside Conferences

05013684 INSIDE CONFERENCE ITEM ID: CN052238262
13:20 II Y09 Fabrication of keratin - hydroxyapatite **hybrid sponges**
Kaneko, S.; Tachibana, A.; Tanabe, T.; Yamauchi, K.
CONFERENCE: Macromolecules:; SPSJ-Symposium; 52nd
POLYMER PREPRINTS JAPAN -ENGLISH EDITION-, 2003; VOL 52; NO 2 P: E 1033
Society of Polymer Science, Japan,, 2003
LANGUAGE: English DOCUMENT TYPE: Conference Preprinted abstracts
CONFERENCE SPONSOR: Society of Polymer Science, Japan
CONFERENCE LOCATION: Yamaguchi, Japan 2003; Sep (200309)

BRITISH LIBRARY ITEM LOCATION: 6547.715300
DESCRIPTORS: Macromolecules; Polymer science; SPSJ

13:20 II Y09 Fabrication of keratin - hydroxyapatite **hybrid sponges**

3/9,K/21 (Item 1 from file: 71)
DIALOG(R)File 71:ELSEVIER BIOBASE

03490768 2006275957
Structure of White Rhinoceros (Ceratotherium simum) horn investigated by X-ray computed tomography and histology with implications for growth and external form
Hieronymus T.L.; Witmer L.M.; Ridgely R.C.
ADDRESS: T.L. Hieronymus, Department of Biological Sciences, Irvine Hall, Ohio University, Athens, OH 45701, United States

EMAIL: Th108702@ohiou.edu
Journal: Journal of Morphology, 267/10 (1172-1176), 2006, United States
CODEN: JOMOA
ISSN: 0362-2525 eISSN: 1097-4687
DOCUMENT TYPE: Article
LANGUAGES: English SUMMARY LANGUAGES: English
NO. OF REFERENCES: 33

The nasal and frontal horns of two individuals of Ceratotherium simum were examined by x-ray computed tomography (CT scanning), gross observation of sectioned horn, and light microscopy of histological sections of the horn tissue. CT scans of both sets of horns reveal a periodic banding pattern that is evident upon gross observation of sections as darker bands of tissue. The overlap of these bands in both histological and CT slices suggests the presence of both a photoabsorbent component (melanin) and a radiodense component (calcium phosphate salts, most likely **hydroxyapatite** or octocalcium phosphate). The distribution of these two components in the horns is hypothesized to contribute to the differential wear patterns that produce the characteristic sweeping conical shape of rhinoceros horn from what otherwise (in the absence of wear and UV exposure) would be cylindrical blocks of constantly growing cornified papillary epidermis. Although extant rhinocerotids are unique in possessing a massive entirely keratinous horn that approximates the functions of **keratin** -and-bone horns such as those of bovid artiodactyls, the tissue structures that make up the horn are strikingly convergent with other examples of papillary cornified epidermis found in horses, artiodactyls, cetaceans, and birds. (c) 2006 Wiley-Liss, Inc.

DESCRIPTORS:
Anatomy; Histology; Tomography; Ceratotherium; Rhinoceros; Integument; **Keratin** ; Horn

SPECIES DESCRIPTORS:
Ceratotherium simum; Rhinoceros; Ceratotherium; Aves; Bovidae; Artiodactyla ; Rhinocerotidae; Cetacea; Equidae; Equus caballus
CLASSIFICATION CODE AND DESCRIPTION:
99 - General

...of both a photoabsorbent component (melanin) and a radiodense component (calcium phosphate salts, most likely **hydroxyapatite** or octocalcium phosphate). The distribution of these two components in the horns is hypothesized to...

...rhinocerotids are unique in possessing a massive entirely keratinous horn that approximates the functions of **keratin** -and-bone horns such as those of bovid artiodactyls, the tissue structures that make up...

DESCRIPTORS:
Anatomy; Histology; Tomography; Ceratotherium; Rhinoceros; Integument; **Keratin** ; Horn
? t s3/9,k/22-32

3/9,K/22 (Item 2 from file: 71)
DIALOG(R)File 71:ELSEVIER BIOBASE

01053759 1999030536

Identification of tuftelin- and amelogenin-interacting proteins using the yeast two-hybrid system

Paine C.T.; Paine M.L.; Snead M.L.
ADDRESS: C.T. Paine, University of Southern California, School of Dentistry, Ctr. for Craniofacial Molec. Biology, 2250 Alcazar Street, Los Angeles, CA 90033, United States

Journal: Connective Tissue Research, 38/1-4 (257-267), 1998, United Kingdom
CODEN: CVTRB
ISSN: 0300-8207
DOCUMENT TYPE: Conference Paper
LANGUAGES: English SUMMARY LANGUAGES: English
NO. OF REFERENCES: 56

Biomineralization of enamel is a complex process that involves the eventual replacement of an extracellular protein matrix by **hydroxyapatite** crystallites. To date four different enamel matrix proteins have been identified; the amelogenins, tuftelin, enamelin and ameloblastin. Assembly of the enamel extracellular matrix from these component proteins is believed to be critical in producing a matrix competent to undergo mineral replacement. Enamel formation is a complex process and additional proteins are likely to have a role in the assembly of the extracellular matrix. In order to identify additional proteins involved in the assembly process, the yeast two-hybrid system developed by Fields and Song (1989) has been implemented. This system allows for the identification of unknown proteins that interact with proteins of interest. Typically a known protein is used as 'bait' to screen a cDNA expression library of interest. In our studies, tuftelin or amelogenin have been used to screen a mouse tooth library produced from one day old pups. A library screening of six million clones with amelogenin as bait resulted in eleven positive clones all of which show high homology to the human leukocyte antigen-B (HLA-B) associated transcript (BAT) family of genes. A library screening of one million clones using tuftelin as the bait identified twenty-one tuftelin-interacting proteins. Ten of these proteins are either **keratin** K5 or **keratin** K6, four are constitutively expressed and the remaining seven are novel. Further characterization of the proteins shown to interact with amelogenin or tuftelin may shed additional light on this complex process of enamel matrix assembly.

DESCRIPTORS:
Biomineralization; Enamel cDNA expression library; Self-assembly and odontogenesis
CLASSIFICATION CODE AND DESCRIPTION:
82.2.12.2 - PROTEIN BIOCHEMISTRY / STRUCTURAL STUDIES / Molecular Recognition / Protein-protein interaction
89.4.1.1 - CELL AND DEVELOPMENTAL BIOLOGY / EXTRACELLULAR MATRIX (STRUCTURE AND FUNCTION) / Extracellular Matrix / Structure and composition

...is a complex process that involves the eventual replacement of an extracellular protein matrix by **hydroxyapatite** crystallites. To date four different enamel matrix proteins have been identified; the amelogenins, tuftelin, enamelin...

...as the bait identified twenty-one tuftelin-interacting proteins. Ten of these proteins are either **keratin** K5 or **keratin** K6, four are constitutively expressed and the remaining seven are novel. Further characterization of the...

3/9,K/23 (Item 1 from file: 73)
DIALOG(R)File 73:EMBASE

12725738 EMBASE No: 2004309901

Rapid fabrication of keratin - hydroxyapatite **hybrid sponges toward osteoblast cultivation and differentiation**

Tachibana A.; Kaneko S.; Tanabe T.; Yamauchi K.
K. Yamauchi, Dept. of Appl. and Bioapplied Chem., Graduate School of Engineering, Osaka City Univ., S., Osaka Japan
AUTHOR EMAIL: Yamauchi@bioa.eng.osaka-cu.ac.jp

Biomaterials (BIOMATERIALS) (United Kingdom) 2005, 26/3 (297-302)
CODEN: BIMAD ISSN: 0142-9612
PUBLISHER ITEM IDENTIFIER: S014296120400170X
DOCUMENT TYPE: Journal ; Article
LANGUAGE: ENGLISH SUMMARY LANGUAGE: ENGLISH
NUMBER OF REFERENCES: 17

Wool **keratin** sponges were reported to be useful scaffolds for long-term and high-density cell cultivation (J. Biotechnol. 93 (2002) 165). The hybrid of the **keratin** sponges with calcium phosphate materials gave the additional function. Two rapid fabrication methods for calcium phosphate hybrid biomaterials were described. Firstly, the CaP-precipitated sponges were obtained by only the immersion of the carboxyl-sponges, chemically introduced with high amount of carboxyl groups on the sponges, in calcium and phosphate ions containing buffers such as PBS(+) for only 1-3 days. Neither sponge, introduced with amino or amido groups or non-treated, gave significant calcium phosphate precipitation. The carboxyl-sponges were mimics of matrix gamma-carboxyglutamic acid protein, which is responsible for osteoblast calcification. Secondly, the **hydroxyapatite** particle suspension was added onto carboxyl-sponges to fabricate trapped sponge. The trapped **hydroxyapatite** particles might interact with **keratin** protein of the sponge walls. Preliminary experiments measuring the expression of alkaline phosphatase, early osteoblast differentiation marker, suggested that both hybrid sponges, CaP-precipitated and trapped sponges, alter the differentiation pattern of preosteoblasts, MC3T3-E1. (c) 2004 Elsevier Ltd. All rights reserved.

DRUG DESCRIPTORS:
*** keratin ; * hydroxyapatite**
calcium phosphate; biomaterial; carboxyl group; calcium ion; phosphate; buffer; 4 carboxyglutamic acid; alkaline phosphatase
MEDICAL DESCRIPTORS:
*osteoblast; *cell differentiation
hybrid; precipitation; calcification; protein expression; cell line; nonhuman; mouse; controlled study; animal cell; article; priority journal
CAS REGISTRY NO.: 1306-06-5, 51198-94-8 (**hydroxyapatite**); 10103-46-5, 13767-12-9, 14358-97-5, 7758-87-4 (calcium phosphate); 14127-61-8 (calcium ion); 14066-19-4, 14265-44-2 (phosphate); 53861-57-7 (4 carboxyglutamic acid); 9001-78-9 (alkaline phosphatase)
SECTION HEADINGS:
027 Biophysics, Bioengineering and Medical Instrumentation
029 Clinical and Experimental Biochemistry
033 Orthopedic Surgery

Rapid fabrication of keratin - hydroxyapatite **hybrid sponges toward**

osteoblast cultivation and differentiation

Wool **keratin** sponges were reported to be useful scaffolds for long-term and high-density cell cultivation (J. Biotechnol. 93 (2002) 165). The hybrid of the **keratin** sponges with calcium phosphate materials gave the additional function. Two rapid fabrication methods for calcium...

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DRUG DESCRIPTORS:
* **keratin** ; * **hydroxyapatite**
...CAS REGISTRY NO.: 51198-94-8 (**hydroxyapatite**); 10103-46-5...

3/9,K/24 (Item 2 from file: 73)
DIALOG(R)File 73:EMBASE

12047050 EMBASE No: 2003158648
Implantable applications of chitin and chitosan
Khor E.; Lim L.Y.
E. Khor, Department of Chemistry, National University of Singapore, 3 Science Drive 3, Kent Ridge, Singapore 117543 Singapore
AUTHOR EMAIL: chmkhore@nus.edu.sg
Biomaterials (BIOMATERIALS) (United Kingdom) 2003, 24/13 (2339-2349)
CODEN: BIMAD ISSN: 0142-9612
DOCUMENT TYPE: Journal ; Article
LANGUAGE: ENGLISH SUMMARY LANGUAGE: ENGLISH
NUMBER OF REFERENCES: 91

Chitin, extracted primarily from shellfish sources, is a unique biopolymer based on the N-acetyl-glucosamine monomer. More than 40 years have lapsed since this biopolymer had aroused the interest of the scientific community around the world for its potential biomedical applications. Chitin, together with its variants, especially its deacetylated counterpart chitosan, has been shown to be useful as a wound dressing material, drug delivery vehicle and increasingly a candidate for tissue engineering. The promise for this biomaterial is vast and will continue to increase as the chemistry to extend its capabilities and new biomedical applications are investigated. It is interesting to note that a majority of this work has come from Asia. Japan has been the undisputed leader, but other Asian nations, namely Korea, Singapore, Taiwan and Thailand have also made notable contributions. More recently, China has joined the club to become an increasingly major research source for chitin and chitosan in Asia. This review surveys select works of key groups in Asia developing chitin and chitosan materials for implantable biomedical applications.

DRUG DESCRIPTORS:
*chitin--drug combination--cb; *chitin--drug comparison--cm; *chitin --pharmaceutics--pr; *chitosan--pharmaceutics--pr
biomaterial--pharmaceutics--pr; **hydroxyapatite** ; calcium oxide; bone cement; calcium carbonate; gelatin; alginic acid--pharmaceutics--pr; n

acetylglucosamine; hyaluronic acid; **keratin** --pharmaceutics--pr; **keratin** --pharmacology--pd; macrogol--pharmaceutics--pr; sulfadiazine silver --pharmaceutics--pr; sulfadiazine silver--pharmacology--pd; chitin derivative; triamcinolone acetonide--drug therapy--dt; triamcinolone acetonide--pharmaceutics--pr; acrylic acid--pharmaceutics--pr; cyanocobalamin--pharmaceutics--pr; Salvia miltiorrhiza extract --pharmaceutics--pr; microsphere--pharmaceutics--pr; microsphere --intravenous drug administration--iv; polyglactin--drug combination--cb; polyglactin--drug comparison--cm; polyglactin--pharmaceutics--pr; vitamin D --pharmaceutics--pr; apatite--pharmaceutics--pr; calcium phosphate --pharmaceutics--pr; antibiotic agent--pharmaceutics--pr; unclassified drug
MEDICAL DESCRIPTORS:
*biodegradable implant
shellfish; biomedical technology assessment; wound dressing; drug delivery system; tissue engineering; Asia; Japan; Korea; Singapore; Taiwan; Thailand ; China; medical research; implant; bone development; rabbit; biocompatibility; bone prosthesis; extracellular matrix; cell regeneration; freeze drying; wound healing; skin; tissue regeneration; polymorphonuclear cell; cell infiltration; tensile strength; mycelium; infection control; burn; ulcer; wound; hydrogel; inflammation; mouth ulcer--drug therapy--dt; drug release; hydrophobicity; drug formulation; nanoparticle; film; liver; particle size; human; nonhuman; article; priority journal
DRUG TERMS (UNCONTROLLED): vinachitin
CAS REGISTRY NO.: 1398-61-4 (chitin); 9012-76-4 (chitosan); 1306-06-5, 51198-94-8 (**hydroxyapatite**); 1305-78-8 (calcium oxide); 13397-26-7, 13701-58-1, 14791-73-2, 471-34-1 (calcium carbonate); 9000-70-8 (gelatin); 28961-37-7, 29894-36-8, 9005-32-7, 9005-38-3 (alginic acid); 7512-17-6 (n acetylglucosamine); 31799-91-4, 9004-61-9, 9067-32-7 (hyaluronic acid); 25322-68-3 (macrogol); 22199-08-2 (sulfadiazine silver); 76-25-5 (triamcinolone acetonide); 10344-93-1, 79-10-7 (acrylic acid); 53570-76-6, 68-19-9, 8064-09-3 (cyanocobalamin); 26780-50-7, 34346-01-5 (polyglactin); 64476-38-6 (apatite); 10103-46-5, 13767-12-9, 14358-97-5, 7758-87-4 (calcium phosphate)
SECTION HEADINGS:
027 Biophysics, Bioengineering and Medical Instrumentation
033 Orthopedic Surgery
037 Drug Literature Index
039 Pharmacy

DRUG DESCRIPTORS:
biomaterial--pharmaceutics--pr; **hydroxyapatite** ; calcium oxide; bone cement; calcium carbonate; gelatin; alginic acid--pharmaceutics--pr; n acetylglucosamine; hyaluronic acid; **keratin** --pharmaceutics--pr; **keratin** --pharmacology--pd; macrogol--pharmaceutics--pr; sulfadiazine silver --pharmaceutics--pr; sulfadiazine silver--pharmacology--pd; chitin derivative...
...CAS REGISTRY NO.: 51198-94-8 (**hydroxyapatite**); 1305-78-8 (calcium oxide); 13397-26-7...

3/9,K/25 (Item 3 from file: 73)
DIALOG(R)File 73:EMBASE

05755932 EMBASE No: 1994169048
Care of the child with tympanostomy tubes: A visual guide for the pediatrician

Isaacson G.; Rosenfeld R.M.
Dept of Pediatric Otolaryngology, St. Christopher's Hosp. for Children, Erie Ave at Front St,Philadelphia, PA 19134-1095 United States
Pediatrics (PEDIATRICS) (United States) 1994, 93/6 I (924-929)
CODEN: PEDIA ISSN: 0031-4005
DOCUMENT TYPE: Journal; Article
LANGUAGE: ENGLISH
BRAND NAME/MANUFACTURER NAME: cortisporin otic
DRUG DESCRIPTORS:
antibiotic agent--drug administration--ad; antibiotic agent--drug therapy --dt; beta lactamase; calcium--endogenous compound--ec; chlorine; ciprofloxacin--drug therapy--dt; ciprofloxacin--drug administration--ad; collagen--endogenous compound--ec; cortisporin--drug therapy--dt; cortisporin--drug administration--ad; gentamicin--drug administration--ad; gentamicin--drug therapy--dt; hydrocortisone--drug administration--ad; hydrocortisone--drug combination--cb; hydrocortisone--drug therapy--dt; hydrogen peroxide; **hydroxyapatite** ; **keratin** --endogenous compound--ec; metal; neomycin--drug combination--cb; neomycin--drug therapy--dt; neomycin --drug administration--ad; phosphate--endogenous compound--ec; plastic; polymyxin b--drug therapy--dt; polymyxin b--drug combination--cb; polymyxin b--drug administration--ad; tobramycin--drug therapy--dt; tobramycin--drug administration--ad
MEDICAL DESCRIPTORS:
*tympanostomy tube
article; child care; cholesteatoma--complication--co; cholesteatoma --etiology--et; cholesteatoma--surgery--su; eardrum; eardrum perforation --complication--co; human; microscope; myringotomy; oral drug administration; otitis media--drug therapy--dt; otitis media--surgery--su; otorrhea--drug therapy--dt; otorrhea--diagnosis--di; otorrhea--complication --co; otoscopy; patient referral; pediatrician; perception deafness --etiology--et; physical examination; priority journal; reflectometry; sclerosis--complication--co; sclerosis--diagnosis--di; topical drug administration; tympanometry; tympanoplasty
CAS REGISTRY NO.: 9073-60-3 (beta lactamase); 7440-70-2 (calcium); 13981-72-1, 7782-50-5 (chlorine); 85721-33-1 (ciprofloxacin); 9007-34-5 (collagen); 8024-64-4 (cortisporin); 1392-48-9, 1403-66-3, 1405-41-0 (gentamicin); 50-23-7 (hydrocortisone); 7722-84-1 (hydrogen peroxide); 1306-06-5, 51198-94-8 (**hydroxyapatite**); 11004-65-2, 1404-04-2, 1405-10-3, 8026-22-0 (neomycin); 14066-19-4, 14265-44-2 (phosphate); 1404-26-8, 1405-20-5 (polymyxin b); 32986-56-4 (tobramycin)
SECTION HEADINGS:
004 Microbiology: Bacteriology, Mycology, Parasitology and Virology
007 Pediatrics and Pediatric Surgery
011 Otorhinolaryngology
027 Biophysics, Bioengineering and Medical Instrumentation
037 Drug Literature Index

DRUG DESCRIPTORS:
...dt; hydrocortisone--drug administration--ad; hydrocortisone--drug combination--cb; hydrocortisone--drug therapy--dt; hydrogen peroxide; **hydroxyapatite** ; **keratin** --endogenous compound--ec; metal; neomycin--drug combination--cb; neomycin--drug therapy--dt; neomycin--drug administration
...
...CAS REGISTRY NO.: 51198-94-8 (**hydroxyapatite**); 11004-65-2...

3/9,K/26 (Item 4 from file: 73)

DIALOG(R)File 73:EMBASE
(c) 2007 Elsevier B.V. All rts. reserv.

01465092 EMBASE No: 1979186084
Osteoarthrosis and its treatment
Pehlivanov D.
Res. Inst. Int. Dis. Pharmacol., Med. Acad., Sofia Bulgaria
MBI Medico-Biologic Information (MBI MED.-BIOL. INF.) (Bulgaria) 1979
, NO 2/- (3-7)
CODEN: MBIFB
DOCUMENT TYPE: Journal
LANGUAGE: ENGLISH
DRUG DESCRIPTORS:
*chondroitin sulfate; *chondroitin 4 sulfate; *chondroitin 6 sulfate; *
glycine; *glycosaminoglycan; *hyaluronic acid; * **hydroxyapatite** ; *
hydroxyproline; * **keratin** ; *leucine; *mucin; *serine; *threonine; *
tyrosine
MEDICAL DESCRIPTORS:
*arthrosis
cartilage degeneration; drug therapy; drug administration; intramuscular
drug administration; therapy; bone; joint
MEDICAL TERMS (UNCONTROLLED): mucarthrin
CAS REGISTRY NO.: 9007-28-7, 9082-07-9 (chondroitin sulfate); 24967-93-9 (
chondroitin 4 sulfate); 25322-46-7 (chondroitin 6 sulfate); 56-40-6,
6000-43-7, 6000-44-8 (glycine); 31799-91-4, 9004-61-9, 9067-32-7 (
hyaluronic acid); 1306-06-5, 51198-94-8 (**hydroxyapatite**); 51-35-4,
6912-67-0 (hydroxyproline); 61-90-5, 7005-03-0 (leucine); 56-45-1,
6898-95-9 (serine); 36676-50-3, 72-19-5 (threonine); 16870-43-2,
55520-40-6, 60-18-4 (tyrosine)
SECTION HEADINGS:
037 Drug Literature Index

DRUG DESCRIPTORS:
*chondroitin sulfate; *chondroitin 4 sulfate; *chondroitin 6 sulfate; *
glycine; *glycosaminoglycan; *hyaluronic acid; * **hydroxyapatite** ; *
hydroxyproline; * **keratin** ; *leucine; *mucin; *serine; *threonine; *
tyrosine
...CAS REGISTRY NO.: 51198-94-8 (**hydroxyapatite**); 51-35-4...

3/9,K/27 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus
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04402979 JICST ACCESSION NUMBER: 99A0568994 FILE SEGMENT: JICST-E
Formation of Hydroxyapatite **Layer on Plasma Treated and Grafted Textile Fibers.**
HIROTSU TOSHIHIRO (1); TSUJISAKA TOSHIHIRO (2); KURAHASHI MASAO (3)
(1) National Inst. Materials and Chemical Res.; (2) Nara Prefectural Inst. Ind. Technol.; (3) Kyoto Munic. Text. Res. Inst.
Sen'i Gakkai Yokoshu(Sen'i Gakkai Preprints), 1999, VOL.1999, PAGE.G.176, REF.2
JOURNAL NUMBER: L1827AAB
UNIVERSAL DECIMAL CLASSIFICATION: 677.027
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Conference Proceeding
ARTICLE TYPE: Short Communication

MEDIA TYPE: Printed Publication
DESCRIPTORS: **hydroxyapatite** ; fiber modification; surface treatment; plasma processing; graft copolymerization; cotton(fiber); wool; polyester fiber; nylon fiber; acrylic fiber; silk; vinyl compound; aliphatic carboxylic acid; unsaturated carboxylic acid
BROADER DESCRIPTORS: apatite; phosphate mineral; mineral(geology); reforming; treatment; copolymerization; polymerization; chemical reaction; seed hair fiber; vegetable fiber; cellulosic fiber; fiber; natural fiber; **keratin** fiber; animal fiber; protein fiber; synthetic fiber; man-made fiber; polyamide fiber; olefin compound; carboxylic acid
CLASSIFICATION CODE(S): YM02050Z

Formation of Hydroxyapatite **Layer on Plasma Treated and Grafted Textile Fibers.**
DESCRIPTORS: **hydroxyapatite** ;
...BROADER DESCRIPTORS: **keratin** fiber

3/9,K/28 (Item 2 from file: 94)
DIALOG(R)File 94:JICST-EPlus

02666535 JICST ACCESSION NUMBER: 96A0269596 FILE SEGMENT: JICST-E
The Mineralization of Crystalline Inorganic Components in Japanese Serow Horn.
HASHIGUCHI K (1); HASHIMOTO K (1)
(1) Hamamatsu Univ. School of Medicine, Shizuoka, JPN
Okajimas Folia Anat Jpn, 1995, VOL.72,NO.5, PAGE.235-243, FIG.5, TBL.1, REF.22
JOURNAL NUMBER: F0730AAJ ISSN NO: 0030-154X CODEN: OFAJA
UNIVERSAL DECIMAL CLASSIFICATION: 591.177.05+591.471
LANGUAGE: English COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication
ABSTRACT: The Japanese serow (Capricornis crispus) is protected as a special natural monument in Japan. The ring count of the soft X-ray photographs of Japanese serow horn was found to be a useful criteria to determine the ages exactly. The mineralization process in Japanese serow horn was examined microscopic, ICP and X-ray diffraction methods. The incremental lines appeared as light and dark layers in the section stained for fuchsin and methylen blue. Mineral depositions were observed among the **keratin** fibers, no matrix vesicle in the electron dense regions. X-ray diffraction pattern of crystalline inorganic components in Japanese serow horn was determined as .BETA.-tricalcium phosphate (TCP), **hydroxyapatite** (HA) and unknown phase. ICP measurement was also carried out. The horn contained trace elements of K besides Na, Ca, Fe and P. The Ca/P molar was found to be 2.9. The ratio was much higher than the theoretical value of HA. Presumably, **keratin** was the seed which might be related to mineralization and higher Ca activity was detected in the initial phase of epitaxial growth. Analytical results of the measurement of trace elements in Japanese serow horn by using ICP method seemed to be correlated with the evaluation of environmental conditions. The present study indicated that the mineralization of Japanese serow horn directly related with deposition Ca-deficient HA among the **keratin** fibers. (author abst.)

DESCRIPTORS: Capricornis crispus; horn(animal tissue); calcification(physiology); **keratin** fiber; **hydroxyapatite** ; calcium; phosphorus; minor component; X-ray diffraction; ICP(analysis); electron microscopy; optical microscopy; mineral metabolism
BROADER DESCRIPTORS: Bovidae; Ruminantia; Artiodactyla; Mammalia; Vertebrata; animal; head(body region); body region; variation; animal fiber; protein fiber; fiber; natural fiber; apatite; phosphate mineral; mineral(geology); alkaline earth metal; metallic element; element; fourth row element; third row element; nitrogen group element; component; X-ray scattering; electromagnetic wave scattering; scattering; diffraction; coherent scattering; plasma spectrochemical analysis; instrumental analysis; analysis(separation); analysis; microscopy; observation and view; metabolism
CLASSIFICATION CODE(S): EJ10030R

...ABSTRACT: in the section stained for fuchsin and methylen blue. Mineral depositions were observed among the **keratin** fibers, no matrix vesicle in the electron dense regions. X-ray diffraction pattern of crystalline inorganic components in Japanese serow horn was determined as .BETA.-tricalcium phosphate (TCP), **hydroxyapatite** (HA) and unknown phase. ICP measurement was also carried out. The horn contained trace elements...

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...the mineralization of Japanese serow horn directly related with deposition Ca-deficient HA among the **keratin** fibers. (author abst.)
...DESCRIPTORS: **keratin** fiber...
... **hydroxyapatite** ;

3/9,K/29 (Item 3 from file: 94)
DIALOG(R)File 94:JICST-EPlus

01515644 JICST ACCESSION NUMBER: 92A0133982 FILE SEGMENT: JICST-E
Cell biological studies on biocompatibility of hydroxyaptite:An analysis of cellular activities expressed by established human gingival cells cultured on the hydroxyapatite .
ISHIKAWA KEIKO (1)
(1) Okazaki National Res. Inst.
Shika Kiso Igakkai Zasshi(Japanese Journal of Oral Biology), 1991, VOL.33,NO.6, PAGE.513-533, FIG.17, REF.36
JOURNAL NUMBER: Y0018AAZ ISSN NO: 0385-0137
UNIVERSAL DECIMAL CLASSIFICATION: 616.314-7
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication
ABSTRACT: Although **hydroxyapatite** has been widely applied in the field of dental medicine, there is the argument about clinical complaints due to infection and inflammation after its implantation. In the present study I have attempted to establish a useful in vitro system to evaluate the biocompatibility of **hydroxyapatite** and other biomaterials. I have firstly established a human gingival fibroblast line designated as

HGF-22 by clonal selection techniques and two human gingival epithelial cell lines designated as HGE-15vI and HGE-15vII, respectively, by transfection of SV40-T genes. All these established cells grow actively and maintain their cellular characteristics with stability. HGE-15vI cells conserve much higher activity to synthesize **keratin** molecules than HGE-15vII cells. Using HGF-22 and HGE-15vI cells I have quantitatively analyzed their activities represented by cell adhesion, spreading, growth and differentiation when cultured on the surface of a **hydroxyapatite** disc, which is thin enough to observe their living conditions by a phase contrast microscope, and on the plastic surface of commercial cell culture dishes. From results obtained it is possible to conclude that the established cell lines can provide highly useful experimental tools for basic studies of clinically used biomaterials such as **hydroxyapatite** . (author abst.)
DESCRIPTORS: histocompatibility; **hydroxyapatite** ; gingiva; fibroblast;

epithelium; human(primates); cultured cell; cell proliferation; differentiation antigen; electron microscopy; transfection; SV40 virus; adhesion(surface chemistry)
BROADER DESCRIPTORS: transplantation immunity; immunological reaction; reaction; biocompatibility; property; apatite; phosphate mineral; mineral(geology); periodontium; oral cavity; digestive organ; blast cell; cell(cytology); epithelial tissue; animal tissue; biomedical tissue; organization; histomembrane; membrane and film; cell physiology ; multiplication(biology); surface antigen; antigen; microscopy; observation and view; gene introduction; gene manipulation; genetic technique; technology; operation(processing); Polyomavirus; Papovaviridae; DNA virus; virus; microorganism; tumor virus; animal virus
CLASSIFICATION CODE(S): GT06000B

...**hydroxyaptite:An analysis of cellular activities expressed by established human gingival cells cultured on the** hydroxyapatite .
ABSTRACT: Although **hydroxyapatite** has been widely applied in the field of dental medicine, there is the argument about...

...I have attempted to establish a useful in vitro system to evaluate the biocompatibility of **hydroxyapatite** and other biomaterials. I have firstly established a human gingival fibroblast line designated as HGF ...

...maintain their cellular characteristics with stability. HGE-15vI cells conserve much higher activity to synthesize **keratin** molecules than HGE-15vII cells. Using HGF-22 and HGE-15vI cells I have quantitatively ...
...represented by cell adhesion, spreading, growth and differentiation when cultured on the surface of a **hydroxyapatite** disc, which is thin enough to observe their living conditions by a phase contrast microscope...

...can provide highly useful experimental tools for basic studies of clinically used biomaterials such as **hydroxyapatite** . (author abst.)
...DESCRIPTORS: **hydroxyapatite** ;

3/9,K/30 (Item 1 from file: 136)
DIALOG(R)File 136:BioEngineering Abstracts

0000155296 IP ACCESSION NO: 5977975

Rapid fabrication of keratin - hydroxyapatite hybrid sponges toward osteoblast cultivation and differentiation

Tachibana, A; Kaneko, S; Tanabe, T; Yamauchi, K
Department of Applied and Bioapplied Chemistry, Graduate School of Engineering, Osaka City University, Sugimoto 3-3-138, Sumiyoshi-ku, Osaka 558- 8585, Japan, [mailto:tatibana@bioa.eng.osaka-cu.ac.jp]

Biomaterials, v 26, n 3, p 297-302, January 2005
PUBLICATION DATE: 2005

PUBLISHER: Elsevier Science Ltd., The Boulevard Langford Lane Kidlington Oxford OX5 1GB UK, [mailto:nlinfo-f@elsevier.nl], [URL:http://www.elsevier.nl]

DOCUMENT TYPE: Journal Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English
ISSN: 0142-9612
DOI: 10.1016/j.biomaterials.2004.02.032
FILE SEGMENT: BioEngineering Abstracts

ABSTRACT:
Wool **keratin** sponges were reported to be useful scaffolds for long-term and high-density cell cultivation (J. Biotechnol. 93 (2002) 165). The hybrid of the **keratin** sponges with calcium phosphate materials gave the additional function. Two rapid fabrication methods for calcium phosphate hybrid biomaterials were described. Firstly, the CaP-precipitated sponges were obtained by only the immersion of the carboxyl-sponges, chemically introduced with high amount of carboxyl groups on the sponges, in calcium and phosphate ions containing buffers such as PBS(+) for only 1-3 days. Neither sponge, introduced with amino or amido groups or non-treated, gave significant calcium phosphate precipitation. The carboxyl-sponges were mimics of matrix gamma-carboxyglutamic acid protein, which is responsible for osteoblast calcification. Secondly, the **hydroxyapatite** particle suspension was added onto carboxyl-sponges to fabricate trapped sponge. The trapped **hydroxyapatite** particles might interact with **keratin** protein of the sponge walls. Preliminary experiments measuring the expression of alkaline phosphatase, early osteoblast differentiation marker, suggested that both hybrid sponges, CaP-precipitated and trapped sponges, alter the differentiation pattern of preosteoblasts, MC3T3-E1.

DESCRIPTORS: Calcium phosphate; Hybrids; **Keratin** ; Osteoblastogenesis; **Hydroxyapatite** ; Biomaterials; Osteoblasts; Precipitation; Calcification; Wool; Immersion; Alkaline phosphatase
SUBJ CATG: 110, Biomedical Materials & Tissue Engineering

Rapid fabrication of keratin - hydroxyapatite hybrid sponges toward osteoblast cultivation and differentiation

ABSTRACT:
Wool **keratin** sponges were reported to be useful scaffolds for long-term and high-density cell cultivation (J. Biotechnol. 93 (2002) 165). The

hybrid of the **keratin** sponges with calcium phosphate materials gave the additional function. Two rapid fabrication methods for calcium...

...mimics of matrix gamma-carboxyglutamic acid protein, which is responsible for osteoblast calcification. Secondly, the **hydroxyapatite** particle suspension was added onto carboxyl-sponges to fabricate trapped sponge. The trapped **hydroxyapatite** particles might interact with **keratin** protein of the sponge walls. Preliminary experiments measuring the expression of alkaline phosphatase, early osteoblast...

DESCRIPTORS: Calcium phosphate; Hybrids; **Keratin** ; Osteoblastogenesis; **Hydroxyapatite** ; Biomaterials; Osteoblasts; Precipitation; Calcification; Wool; Immersion; Alkaline phosphatase

3/9,K/31 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

16831162 PASCAL No.: 04-0490140
The mechanical efficiency of natural materials
WEGST U G K; ASHBY M F
Max-Planck-Institut fuer Metallforschung, Heisenbergstrasse 3, 70569, Stuttgart, Germany; Engineering Design Centre, Engineering Department, University of Cambridge, Trumpington Street, Cambridge CB2 1PZ, United Kingdom
Journal: Philosophical magazine : (2003. Print), 2004, 84 (21) 2167-2181
ISSN: 1478-6435 Availability: INIST-134A3; 354000120031670030
No. of Refs.: 10 ref.

Document Type: P (Serial) ; A (Analytic)
Country of Publication: United Kingdom
Language: English
The materials of nature, for example cellulose, lignin, **keratin** , chitin, collagen and **hydroxyapatite** , and the structures made from them, for example bamboo, wood, antler and bone, have a remarkable range of mechanical properties. These can be compared by presenting them as material property charts, well known for the materials of engineering. Material indices (significant combinations of properties) can be plotted on to the charts, identifying materials with extreme values of an index, suggesting that they have evolved to carry particular modes of loading, or to sustain large tensile or flexural deformations, without failure. This paper describes a major revision and update of a set of property charts for natural material published some 8 years ago by Ashby et al. with examples of their use to study mechanical efficiency in nature.

English Descriptors: Reviews; Deformation; Microstructure; Young modulus; Mechanical strength; Fracture toughness; Cellulose; Lignin; **Keratin** ; Chitin; Collagen; **Hydroxyapatite** ; Wood
Broad Descriptors: Organic compounds; Compose organique

French Descriptors: Article synthese; Deformation; Microstructure; Module Young; Resistance mecanique; Tenacite; Cellulose; Lignine; Keratine; Chitine; Collagene; Apatite hydroxylee; Bois; 6220F

Classification Codes: 001B60B20F

The materials of nature, for example cellulose, lignin, **keratin** , chitin, collagen and **hydroxyapatite** , and the structures made from them, for example bamboo, wood, antler and bone, have a...

English Descriptors: Reviews; Deformation; Microstructure; Young modulus; Mechanical strength; Fracture toughness; Cellulose; Lignin; **Keratin** ; Chitin; Collagen; **Hydroxyapatite** ; Wood

3/9,K/32 (Item 2 from file: 144)
DIALOG(R)File 144:Pascal

15898483 PASCAL No.: 03-0037198
Isolation of Thermoanaerobacter keratinophilus sp. nov., a novel thermophilic, anaerobic bacterium with keratinolytic activity
RIESSEN Sabine; ANTRANIKIAN Garabed
Institute of Technical Microbiology, Technical University Hamburg-Harburg, Kasernenstr. 12, 21073 Hamburg, Germany
Journal: Extremophiles, 2001, 5 (6) 399-408
ISSN: 1431-0651 Availability: INIST-26559; 354000103519230050
No. of Refs.: 1 p.1/4
Document Type: P (Serial) ; A (Analytic)
Country of Publication: Japan
Language: English
Several thermophilic anaerobic bacteria with keratinolytic activity growing at temperatures between 50 Degree C and 90 Degree C were isolated from samples collected on the island of Sao Miguel in the Azores (Portugal). On the basis of morphological, physiological, and 16S rDNA studies, the isolate 2KXI was identified as a new species of the genus Thermoanaerobacter, designated Thermoanaerobacter keratinophilus. This strain, which grows optimally at 70 Degree C, pH 7.0, and 0.5% NaCI, is the first member of the genus Thermoanaerobacter that has been described for its ability to degrade native **keratin** . Around 70% of native wool was solubilized after 10 days of incubation under anaerobic conditions. The strain was shown to possess intracellular and extracellular proteases optimally active at 60 Degree C, pH 7.0, and 85 Degree C, pH 8.0, respectively. **Keratin** hydrolysis was demonstrated in vitro using a sodium dodecyl sulfate gel containing feather meal. The extracellular protease responsible for breaking down **keratin** fibers was purified to homogeneity in only one step by applying **hydroxy**apatite column chromatography. The enzyme belongs to the serine-type proteases and has a molecular mass of 135 kDa.

English Descriptors: Thermoanaerobacter; Thermophily; Anaerobe; Temperature ; Island; Azores; Portugal; Ribosomal DNA; New genus; pH; Isolate; New species
Broad Descriptors: Bacteria; Atlantic Ocean Islands; Europe; Biotope; Bacterie; Iles Atlantiques; Europe; Biotope; Bacteria; Islas Atlantico; Europa; Biotopo

French Descriptors: Thermoanaerobacter; Thermophilie; Anaerobie; Temperature; Ile; Acores; Portugal; DNA ribosomique; Genre nouveau; pH; Isolat; Espece nouvelle

Classification Codes: 002A05B02; 002A05B09

...member of the genus Thermoanaerobacter that has been described for its ability to degrade native **keratin** . Around 70% of native wool was solubilized after 10 days of incubation under anaerobic conditions...

...at 60 Degree C, pH 7.0, and 85 Degree C, pH 8.0, respectively. **Keratin** hydrolysis was demonstrated in vitro using a sodium dodecyl sulfate gel containing feather meal. The extracellular protease responsible for breaking down **keratin** fibers was purified to homogeneity in only one step by applying **hydroxyapatite** column chromatography. The enzyme belongs to the serine-type proteases and has a molecular mass...
? t s3/9,k/33-40

3/9,K/33 (Item 1 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

21634580 PMID: 16823809

Structure of white rhinoceros (Ceratotherium simum) horn investigated by X-ray computed tomography and histology with implications for growth and external form.

Hieronymus Tobin L; Witmer Lawrence M; Ridgely Ryan C

Department of Biological Sciences, Ohio University, Athens, Ohio 45701, USA. Th108702@ohiou.edu

Journal of morphology (United States) Oct 2006, 267 (10) p1172-6, ISSN 0362-2525--Print Journal Code: 0406125

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: In Process

Subfile: INDEX MEDICUS

The nasal and frontal horns of two individuals of Ceratotherium simum were examined by x-ray computed tomography (CT scanning), gross observation of sectioned horn, and light microscopy of histological sections of the horn tissue. CT scans of both sets of horns reveal a periodic banding pattern that is evident upon gross observation of sections as darker bands of tissue. The overlap of these bands in both histological and CT slices suggests the presence of both a photoabsorbent component (melanin) and a radiodense component (calcium phosphate salts, most likely **hydroxyapatite** or octocalcium phosphate). The distribution of these two components in the horns is hypothesized to contribute to the differential wear patterns that produce the characteristic sweeping conical shape of rhinoceros horn from what otherwise (in the absence of wear and UV exposure) would be cylindrical blocks of constantly growing cornified papillary epidermis. Although extant rhinocerotids are unique in possessing a massive entirely keratinous horn that approximates the functions of **keratin** -and-bone horns such as those of bovid artiodactyls, the tissue structures that make up the horn are strikingly convergent with other examples of papillary cornified epidermis found in horses, artiodactyls, cetaceans, and birds. Copyright (c) 2006 Wiley-Liss, Inc.

Record Date Created: 20060904

... of both a photoabsorbent component (melanin) and a radiodense component (calcium phosphate salts, most likely **hydroxyapatite** or octocalcium phosphate). The distribution of these two components in the horns is hypothesized to...

... rhinocerotids are unique in possessing a massive entirely keratinous horn that approximates the functions of **keratin** -and-bone horns such as those of bovid artiodactyls, the tissue structures that make up...

3/9,K/34 (Item 2 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

19707234 PMID: 16211607
Applications of X-ray powder diffraction in materials chemistry.
Skakle Jan
Department of Chemistry, University of Aberdeen, Meston Walk, Aberdeen AB24 3UE, Scotland, United Kingdom. j.skakle@abdn.ac.uk
Chemical record (New York, N.Y.) (United States) 2005, 5 (5) p252-62, ISSN 1527-8999--Print Journal Code: 101085550
Publishing Model Print
Document type: Journal Article; Review
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Subfile: INDEX MEDICUS
X-ray powder diffraction is a standard technique in materials chemistry, yet it is often still used in the laboratory as a "one-hit" technique, e.g. for fingerprinting and following the progress of reactions. It is important, however, that the wealth of information available from powder data is not overlooked. While it is only possible here to scratch the surface of possibilities, a range of examples from our research is used to emphasize some of the more accessible techniques and to highlight successes as well as potential problems. The first example is the study of solid solution formation in the oxide systems Ba(3-3x)La(2x)V2O8 and Sr(4-x)Ba(x)Mn3O10 and in the silicate- **hydroxyapatite** bioceramic, Ca10(PO4)6-x(SiO4)x(OH)2-x. Database mining is also explored, using three phases within the pseudobinary phase diagram Li3SbO4-CuO as examples. All three phases presented different challenges: the structure of Li3SbO4 had been previously reported in higher symmetry than was actually the case, Li3Cu2SbO6 was found to be isostructural with Li2TiO3 but the cation ordering had to be rationalized, and Li3CuSbO5 was believed to be triclinic, presenting challenges in indexing the powder pattern. Quantitative phase analysis is briefly discussed, with the emphasis both on success (determination of amorphous phase content in a novel cadmium arsenate phase) and on possible failure (compositional analysis in bone mineral); the reasons for the problems in the latter are also explored. Finally, the use of an area detector system has been shown to be of value in the study of orientational effects (or lack of them) in non- and partially-ordered biomaterials, including p-HEMA, annulus fibrosis of lumbar discs, and **keratin** in the horn of cow's hooves. Copyright 2005 The Japan Chemical Journal Forum and Wiley Periodicals, Inc (62 Refs.)
Descriptors: *Biocompatible Materials--chemistry--CH; *Powders--chemistry --CH; *X-Ray Diffraction--methods--MT; Animals; Cattle; Databases; Durapatite--chemistry--CH; **Keratin** --chemistry--CH; Models, Chemical; Research Support, Non-U.S. Gov't

CAS Registry No.: 0 (Biocompatible Materials); 0 (Powders); 1306-06-5 (Durapatite); 68238-35-7 (Keratin)
Record Date Created: 20051013
Record Date Completed: 20060111

...3x)La(2x)V2O8 and Sr(4-x)Ba(x)Mn3O10 and in the silicate-**hydroxyapatite** bioceramic, Ca10(PO4)6-x(SiO4)x(OH)2-x. Database mining is also explored...

... in non- and partially-ordered biomaterials, including p-HEMA, annulus fibrosis of lumbar discs, and **keratin** in the horn of cow's hooves. Copyright 2005 The Japan Chemical Journal Forum and...
; Animals; Cattle; Databases; Durapatite--chemistry--CH; **Keratin** --chemistry--CH; Models, Chemical; Research Support, Non-U.S. Gov't
Chemical Name: Biocompatible Materials; Powders; Durapatite; **Keratin**

3/9,K/35 (Item 3 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

15250029 PMID: 15262471
Rapid fabrication of keratin - hydroxyapatite **hybrid sponges toward osteoblast cultivation and differentiation.**
Tachibana Akira; Kaneko Sumika; Tanabe Toshizumi; Yamauchi Kiyoshi
Department of Applied and Bioapplied Chemistry, Graduate School of Engineering, Osaka City University, Sugimoto 3-3-138, Sumiyoshi-ku, Osaka 558-8585, Japan. tatibana@bioa.eng.osaka-cu.ac.jp
Biomaterials (England) Jan 2005, 26 (3) p297-302, ISSN 0142-9612--Print Journal Code: 8100316
Publishing Model Print
Document type: Evaluation Studies; Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Subfile: INDEX MEDICUS
Wool **keratin** sponges were reported to be useful scaffolds for long-term and high-density cell cultivation (J. Biotechnol. 93 (2002) 165). The hybrid of the **keratin** sponges with calcium phosphate materials gave the additional function. Two rapid fabrication methods for calcium phosphate hybrid biomaterials were described. Firstly, the CaP-precipitated sponges were obtained by only the immersion of the carboxyl-sponges, chemically introduced with high amount of carboxyl groups on the sponges, in calcium and phosphate ions containing buffers such as PBS(+) for only 1-3 days. Neither sponge, introduced with amino or amido groups or non-treated, gave significant calcium phosphate precipitation. The carboxyl-sponges were mimics of matrix gamma-carboxyglutamic acid protein, which is responsible for osteoblast calcification. Secondly, the **hydroxyapatite** particle suspension was added onto carboxyl-sponges to fabricate trapped sponge. The trapped **hydroxyapatite** particles might interact with **keratin** protein of the sponge walls. Preliminary experiments measuring the expression of alkaline phosphatase, early osteoblast differentiation marker, suggested that both hybrid sponges, CaP-precipitated and trapped sponges, alter the differentiation pattern of preosteoblasts, MC3T3-E1.
Descriptors: *Bone Substitutes--chemistry--CH; *Durapatite--chemistry--CH ; * **Keratin** --chemistry--CH; *Osteoblasts--cytology--CY; *Osteoblasts --physiology--PH; *Osteogenesis--physiology--PH; *Tissue Engineering

--methods--MT; Animals; Biocompatible Materials--chemistry--CH; Cell Differentiation--physiology--PH; Comparative Study; Materials Testing; Mice ; Research Support, Non-U.S. Gov't
CAS Registry No.: 0 (Biocompatible Materials); 0 (Bone Substitutes); 1306-06-5 (Durapatite); 68238-35-7 (Keratin)
Record Date Created: 20040720
Record Date Completed: 20050215

Rapid fabrication of keratin - hydroxyapatite **hybrid sponges toward osteoblast cultivation and differentiation.**

Wool **keratin** sponges were reported to be useful scaffolds for long-term and high-density cell cultivation (J. Biotechnol. 93 (2002) 165). The hybrid of the **keratin** sponges with calcium phosphate materials gave the additional function. Two rapid fabrication methods for calcium...

... mimics of matrix gamma-carboxyglutamic acid protein, which is responsible for osteoblast calcification. Secondly, the **hydroxyapatite** particle suspension was added onto carboxyl-sponges to fabricate trapped sponge. The trapped **hydroxyapatite** particles might interact with **keratin** protein of the sponge walls. Preliminary experiments measuring the expression of alkaline phosphatase, early osteoblast...

Descriptors: *Bone Substitutes--chemistry--CH; *Durapatite--chemistry--CH ; * **Keratin** --chemistry--CH; *Osteoblasts--cytology--CY; *Osteoblasts --physiology--PH; *Osteogenesis--physiology--PH; *Tissue Engineering --methods--MT
Chemical Name: Biocompatible Materials; Bone Substitutes; Durapatite; **Keratin**

3/9,K/36 (Item 4 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

13519666 PMID: 11778841

Isolation of Thermoanaerobacter keratinophilus sp. nov., a novel thermophilic, anaerobic bacterium with keratinolytic activity.

Riessen S; Antranikian G
Institute of Technical Microbiology, Technical University Hamburg-Harburg, Germany.

Extremophiles - life under extreme conditions (Germany) Dec 2001, 5 (6) p399-408, ISSN 1431-0651--Print Journal Code: 9706854
Publishing Model Print
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Subfile: INDEX MEDICUS; SPACE LIFE SCIENCES

Several thermophilic anaerobic bacteria with keratinolytic activity growing at temperatures between 50 degrees C and 90 degrees C were isolated from samples collected on the island of Sao Miguel in the Azores (Portugal). On the basis of morphological, physiological, and 16S rDNA studies, the isolate 2KXI was identified as a new species of the genus Thermoanaerobacter, designated Thermoanaerobacter keratinophilus. This strain, which grows optimally at 70 degrees C, pH 7.0, and 0.5% NaCl, is the first member of the genus Thermoanaerobacter that has been described for its ability to degrade native **keratin** . Around 70% of native wool was solubilized after 10 days of incubation under anaerobic conditions. The strain was shown to possess intracellular and extracellular proteases

optimally active at 60 degrees C, pH 7.0, and 85 degrees C, pH 8.0, respectively. **Keratin** hydrolysis was demonstrated in vitro using a sodium dodecyl sulfate gel containing feather meal. The extracellular protease responsible for breaking down **keratin** fibers was purified to homogeneity in only one step by applying **hydroxyapatite** column chromatography. The enzyme belongs to the serine-type proteases and has a molecular mass of 135 kDa.

Descriptors: *Bacillaceae--isolation and purification--IP; *Bacillaceae --metabolism--ME; *Bacteria, Anaerobic--isolation and purification--IP; *Bacteria, Anaerobic--metabolism--ME; * **Keratin** --metabolism--ME; Bacillaceae--classification--CL; Bacillaceae--genetics--GE; Bacteria, Anaerobic--classification--CL; Bacteria, Anaerobic--genetics--GE; Biodegradation; DNA, Bacterial--genetics--GE; DNA, Ribosomal--genetics--GE; Heat; Peptide Hydrolases--chemistry--CH; Peptide Hydrolases--metabolism --ME; Phylogeny; Research Support, Non-U.S. Gov't; Textiles

CAS Registry No.: 0 (DNA, Bacterial); 0 (DNA, Ribosomal); 68238-35-7 (Keratin)

Enzyme No.: EC 3.4.- (Peptide Hydrolases); EC 3.4.- (keratinase)

Record Date Created: 20020107

Record Date Completed: 20020709

...member of the genus Thermoanaerobacter that has been described for its ability to degrade native **keratin** . Around 70% of native wool was solubilized after 10 days of incubation under anaerobic conditions...

...at 60 degrees C, pH 7.0, and 85 degrees C, pH 8.0, respectively. **Keratin** hydrolysis was demonstrated in vitro using a sodium dodecyl sulfate gel containing feather meal. The extracellular protease responsible for breaking down **keratin** fibers was purified to homogeneity in only one step by applying **hydroxyapatite** column chromatography. The enzyme belongs to the serine-type proteases and has a molecular mass...

...Descriptors: purification--IP; *Bacillaceae--metabolism--ME; *Bacteria, Anaerobic--isolation and purification--IP; *Bacteria, Anaerobic --metabolism--ME; * **Keratin** --metabolism--ME

Chemical Name: DNA, Bacterial; DNA, Ribosomal; **Keratin** ; Peptide Hydrolases; keratinase

3/9,K/37 (Item 5 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

11650877 PMID: 11063033

Identification of tuftelin- and amelogenin-interacting proteins using the yeast two-hybrid system.

Paine C T; Paine M L; Snead M L

University of Southern California, School of Dentistry, Center for Craniofacial Molecular Biology, Los Angeles 90033, USA.

Connective tissue research (ENGLAND) 1998, 38 (1-4) p257-67;discussion 295-303, ISSN 0300-8207--Print Journal Code: 0365263

Contract/Grant No.: DE 06988; DE; NIDCR; DE 07211; DE; NIDCR; DE 11704; DE; NIDCR

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

Biomineralization of enamel is a complex process that involves the eventual replacement of an extracellular protein matrix by **hydroxyapatite** crystallites. To date four different enamel matrix proteins have been identified; the amelogenins, tuftelin, enamelin and ameloblastin. Assembly of the enamel extracellular matrix from these component proteins is believed to be critical in producing a matrix competent to undergo mineral replacement. Enamel formation is a complex process and additional proteins are likely to have a role in the assembly of the extracellular matrix. In order to identify additional proteins involved in the assembly process, the yeast two-hybrid system developed by Fields and Song (1989) has been implemented. This system allows for the identification of unknown proteins that interact with proteins of interest. Typically a known protein is used as "bait" to screen a cDNA expression library of interest. In our studies, tuftelin or amelogenin have been used to screen a mouse tooth library produced from one day old pups. A library screening of six million clones with amelogenin as bait resulted in eleven positive clones all of which show high homology to the human leukocyte antigen-B (HLA-B) associated transcript (BAT) family of genes. A library screening of one million clones using tuftelin as the bait identified twenty-one tuftelin-interacting proteins. Ten of these proteins are either **keratin** K5 or **keratin** K6, four are constitutively expressed and the remaining seven are novel. Further characterization of the proteins shown to interact with amelogenin or tuftelin may shed additional light on this complex process of enamel matrix assembly.

Descriptors: *Dental Enamel Proteins--metabolism--ME; Animals; Dental Enamel Proteins--genetics--GE; HLA-B Antigens--metabolism--ME; Humans; Mice ; Research Support, U.S. Gov't, P.H.S.; Two-Hybrid System Techniques; Yeasts

CAS Registry No.: 0 (Dental Enamel Proteins); 0 (HLA-B Antigens); 0 (TUFT1 protein, human); 0 (amelogenins)

Record Date Created: 20001130

Record Date Completed: 20001130

... is a complex process that involves the eventual replacement of an extracellular protein matrix by **hydroxyapatite** crystallites. To date four different enamel matrix proteins have been identified; the amelogenins, tuftelin, enamelin...

... as the bait identified twenty-one tuftelin-interacting proteins. Ten of these proteins are either **keratin** K5 or **keratin** K6, four are constitutively expressed and the remaining seven are novel. Further characterization of the...

3/9,K/38 (Item 6 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

11555392 PMID: 9395922

Cytokeratin 8 and 19 as antigens recognized by adenocarcinoma-reactive human monoclonal antibody AE6F4.

Ichikawa A; Tachibana H; Kawamoto S; Kamei M; Honjoh T; Hashizume S; Shirahata S

Graduate School of Genetic Resources Technology, Faculty of Agriculture, Kyushu University, Fukuoka, Japan.

Human antibodies (UNITED STATES) 1997, 8 (4) p195-202, ISSN

1093-2607--Print Journal Code: 9711270
Publishing Model Print
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Subfile: INDEX MEDICUS

The human monoclonal antibody (MAb) AE6F4 is secreted by a human-human hybridoma line established from the in vitro immunization of normal human peripheral blood lymphocytes with the human lung adenocarcinoma cell line, A549. This MAb is strongly reactive to lung cancer tissues. In the previous study, the antigens recognized by the MAb AE6F4 were purified from A549 cells and identified as 14-3-3 protein and 31 kDa cytosolic phospholipase A2 (cPLA2). The MAb AE6F4 also binds two kinds of antigens (53 kDa and 40 kDa), which are not related to 14-3-3 protein or 31 kDa cPLA2, in the human breast adenocarcinoma cell line, MCF-7. We purified a 38 kDa antigen, which is a degradation product of 53 kDa antigen from breast adenocarcinoma MCF-7 cells using ion-exchange and **hydroxyapatite** column chromatography. Two partial amino acid sequences of the purified 38 kDa antigen showed 95-100% homology to human cytokeratin 8 (CK8). Two-dimensional gel electrophoresis and immunoblot analysis of intermediate filament fraction separated from MCF-7 cells demonstrated that the 53 kDa and 40 kDa antigens were CK8 and CK19, respectively. Antigenic determinants on CK8 and CK19 recognized by the MAb AE6F4 were resistant to sodium periodate treatment, although antigenic determinant on 31 kDa antigen (14-3-3 protein and(or) cPLA2) was sensitive to this treatment. These results suggest that the MAb AE6F4 reacts with both carbohydrate and peptide antigenic determinants.

Descriptors: *Adenocarcinoma--immunology--IM; *Antibodies, Monoclonal; *Antigens; * **Keratin** --immunology--IM; Adenocarcinoma--diagnosis--DI; Amino Acid Sequence; Antibodies, Monoclonal--diagnostic use--DU; Antigens --chemistry--CH; Antigens--genetics--GE; Carbohydrates--chemistry--CH; Carbohydrates--immunology--IM; Epitopes--chemistry--CH; Epitopes --genetics--GE; Humans; Hybridomas--immunology--IM; **Keratin** --chemistry --CH; **Keratin** --genetics--GE; Molecular Sequence Data; Molecular Weight; Peptides--chemistry--CH; Peptides--genetics--GE; Peptides--immunology--IM ; Tumor Cells, Cultured

CAS Registry No.: 0 (Antibodies, Monoclonal); 0 (Antigens); 0 (Carbohydrates); 0 (Epitopes); 0 (Peptides); 68238-35-7 (Keratin)

Record Date Created: 19980115
Record Date Completed: 19980115

...product of 53 kDa antigen from breast adenocarcinoma MCF-7 cells using ion-exchange and **hydroxyapatite** column chromatography. Two partial amino acid sequences of the purified 38 kDa antigen showed 95...

Descriptors: *Adenocarcinoma--immunology--IM; *Antibodies, Monoclonal; *Antigens; * **Keratin** --immunology--IM...; chemistry--CH; Carbohydrates --immunology--IM; Epitopes--chemistry--CH; Epitopes--genetics--GE; Humans; Hybridomas--immunology--IM; **Keratin** --chemistry--CH; **Keratin** --genetics --GE; Molecular Sequence Data; Molecular Weight; Peptides--chemistry--CH; Peptides--genetics--GE; Peptides--immunology...

Chemical Name: Antibodies, Monoclonal; Antigens; Carbohydrates; Epitopes; Peptides; **Keratin**

3/9,K/39 (Item 7 from file: 155)
DIALOG(R)File 155:MEDLINE(R)

10775934 PMID: 8868213

The mineralization of crystalline inorganic components in Japanese serow horn.

Hashiguchi K; Hashimoto K

Department of Oral Surgery, Hamamatsu University School of Medicine, Shizuoka, Japan.

Okajimas folia anatomica Japonica (JAPAN) Dec 1995, 72 (5) p235-43, ISSN 0030-154X--Print Journal Code: 0401014

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

The Japanese serow (Capricornis crispus) is protected as a special natural monument in Japan. The ring count of the soft X-ray photographs of Japanese serow horn was found to be a useful criteria to determine the ages exactly. The mineralization process in Japanese serow horn was examined microscopic, ICP and X-ray diffraction methods. The incremental lines appeared as light and dark layers in the section stained for fuchsin and methylen blue. Mineral depositions were observed among the **keratin** fibers, no matrix vesicle in the electron dense regions. X-ray diffraction pattern of crystalline inorganic components in Japanese serow horn was determined as beta-tricalcium phosphate (TCP), **hydroxyapatite** (HA) and unknown phase. ICP measurement was also carried out. The horn contained trace elements of K besides Na, Ca, Fe and P. The Ca/P molar was found to be 2.9. The ratio was much higher than the theoretical value of HA. Presumably, **keratin** was the seed which might be related to mineralization and higher Ca activity was detected in the initial phase of epitaxial growth. Analytical results of the measurement of trace elements in Japanese serow horn by using ICP method seemed to be correlated with the evaluation of environmental conditions. The present study indicated that the mineralization of Japanese serow horn directly related with deposition Ca-deficient HA among the **keratin** fibers.

Descriptors: *Antelopes--metabolism--ME; *Calcification, Physiologic; *Horns--metabolism--ME; *Minerals--metabolism--ME; Animals; Crystallization ; Hydroxyapatites--metabolism--ME

CAS Registry No.: 0 (Hydroxyapatites); 0 (Minerals)

Record Date Created: 19961126

Record Date Completed: 19961126

... in the section stained for fuchsin and methylen blue. Mineral depositions were observed among the **keratin** fibers, no matrix vesicle in the electron dense regions. X-ray diffraction pattern of crystalline inorganic components in Japanese serow horn was determined as beta-tricalcium phosphate (TCP), **hydroxyapatite** (HA) and unknown phase. ICP measurement was also carried out. The horn contained trace elements...

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... the mineralization of Japanese serow horn directly related with deposition Ca-deficient HA among the **keratin** fibers.

3/9,K/40 (Item 1 from file: 357)
DIALOG(R)File 357:Derwent Biotech Res.

0375660 DBR Accession No.: 2005-21366 PATENT
Novel protease having high degradation activity with respect to skin desmosome, in comparison with skin keratin **, useful for preparing a skin cleaning agent composition - isolation and purification of a protease from Bacillus useful for the preparation of a cosmetic composition for desmosome degradation**
AUTHOR: SUZUKI N; UENO J; KIGAWA H
PATENT ASSIGNEE: LION CORP 2005
PATENT NUMBER: JP 2005192403 PATENT DATE: 20050721 WPI ACCESSION NO.: 2005-501991 (200551)
PRIORITY APPLIC. NO.: JP 2003434868 APPLIC. DATE: 20031226
NATIONAL APPLIC. NO.: JP 2003434868 APPLIC. DATE: 20031226
LANGUAGE: Japanese
ABSTRACT: DERWENT ABSTRACT: NOVELTY - A protease (I) having high degradation activity with respect to skin desmosome, in comparison with skin **keratin** , is new. DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a skin cleaning agent composition (II) comprising (I). BIOTECHNOLOGY - Preferred Protease: (I) Exhibits a degradation active value, in a ratio of 1:2-3:6-7:8-9, with respect to synthetic substrates such as Ala-Ala-Ala, Ala-Pro-Ala, Ala-Ala-Pro-Phe, and Ala-Ala-Pro-Leu, at 30 degreesC for 1 minute. (I) Exhibits a degradation active value of 1, with respect to a synthetic substrate such as Ala-Ala-Ala at 30 degreesC for 1 minute, and a degradation active value of 6-9 with respect to casein at 30 degreesC for 1 minute. USE - (I) Is useful for preparing a skin cleaning agent composition (claimed). (I) Or (II) is useful for removing desquamation that spoils the fine region in rough skin. ADVANTAGE - (I) Does not exfoliate or peel the keratic layer of normal skin, excessively. (I) Does not cause skin irritations such as redness, itchiness and pain, and can be used daily. EXAMPLE - The microorganism Bacillus sp. HH192B strain was inoculated into Bouillon culture medium comprising sodium carbonate (1 %), and subjected to cultivation at 30 degreesC, overnight, with shaking. The culture supernatant was then ultrafiltered, and ammonium sulfate or acetone precipitation was performed. Then, the obtained product was subjected to diethylaminoethyl (DEAE) ion-exchange column chromatography using **hydroxyapatite** resin, and a crude refined enzyme with a purification degree of 70 % was obtained. To obtain the active ingredient, the obtained elute was centrifuged and a precipitate was collected. The precipitate was dissolved in buffer and column chromatography was performed using DEAE and **hydroxyapatite** . An active enzyme product (protease) was thus obtained.(15 pages)
DESCRIPTORS: Bacillus protease isol., purification, fermentation, bouillon, culture medium, ionexchange chromatography, skin desmosome degradation, appl., cosmetic comp. bacterium enzyme (24, 34)
SECTION: PHARMACEUTICALS-Other Pharmaceuticals-BIOMANUFACTURING and BIOCATALYSIS-Fermentation; BIOMANUFACTURING and BIOCATALYSIS-Biocatalyst Isolation and Characterization

Novel protease having high degradation activity with respect to skin desmosome, in comparison with skin keratin **, useful for preparing a skin cleaning agent composition - isolation and purification of a protease from...**
...ABSTRACT: protease (I) having high degradation activity with respect to

skin desmosome, in comparison with skin **keratin** , is new. DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a skin cleaning agent composition...

...performed. Then, the obtained product was subjected to diethylaminoethyl (DEAE) ion-exchange column chromatography using **hydroxyapatite** resin, and a crude refined enzyme with a purification degree of 70 % was obtained. To...

... collected. The precipitate was dissolved in buffer and column chromatography was performed using DEAE and **hydroxyapatite** . An active enzyme product (protease) was thus obtained.(15 pages)

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